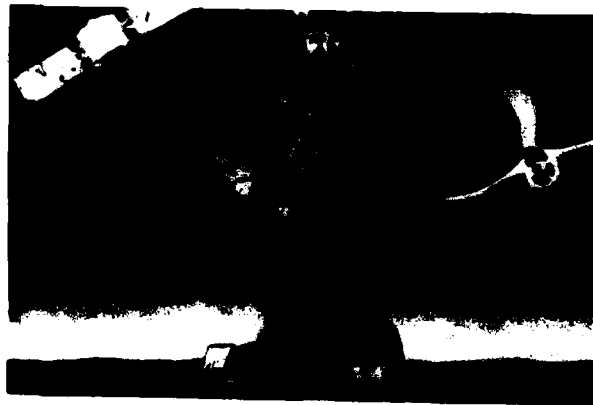


AIRLAND BATTLE 2000

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AIRLAND BATTLE 2000

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HEADQUARTERS
UNITED STATES ARMY TRAINING AND DOCTRINE COMMAND
OFFICE OF THE CHIEF OF STAFF
FORT MONROE, VIRGINIA 23651

10 August 1982

FOREWORD

AIRLAND BATTLE 2000
(1982 Version with Functional Areas)

This document provides the expanded AirLand Battle 2000 concept. It is based on the initial document, dated 4 September 1981, which provided the concept overview and eight functional area concept statements. The first part of this report is an unclassified, updated version of the original overview. No substantiative changes have been made except to remove the classified portions for ease of handling by those interested in the data contained in the functional areas.

The functional area concepts were produced by combining the written reports of the TRADOC proponent task forces and the scripts developed for presentation of the concepts by the task force leaders at the AUSA Symposium held at Carlisle Barracks in May 1982. The document is in the structured writing style to emphasize key points. Copies of the more pertinent slides from the AirLand Battle 2000 briefing have been incorporated as visual stimuli to assist all who have heard the briefing.

A separate annex for aviation has been added. During the final stages of development of the functional areas, the aviation aspects of AirLand Battle 2000 were too transparent and needed to be set out separately.



JOHN B. BLOUNT
Major General, GS
Chief of Staff

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With an army inferior in numbers, in cavalry and in artillery, a commander must avoid a general action. He must make up the deficiency in numbers by rapidity of movements; want of artillery, by the nature of his maneuvers; inferiority of cavalry, by the choice of positions. In such circumstances the morale of the soldier is a great factor.

Napoleon, Maxim No. 10



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AIRLAND BATTLE 2000

I. INTRODUCTION

1. Purpose. The AirLand Battle 2000 Concept is developed to guide future organizational alignments, doctrine, training, and materiel requirements. It is necessary to project 20 years into the future to realize implementation of the Concept Based Requirements System. Such a projection will foster the establishment of valid requirements well in advance of traditional development cycles, not only in the US but also in NATO. This allows a professional evaluation of the threat, determination and conceptualization of the total requirements and then the sequential programming of the specific materiel, doctrinal, organizational, and training needs. The result of this process is an integrated package of associated assets needed by US and allied forces to fight and win on the battlefields of the future. The new AirLand Battle doctrine will remain valid for the near and mid-term years. It is the intent of the AirLand Battle 2000 Concept to examine the evolution that will occur as the study of trends begins to clarify the environment, battlefield characteristics and service imperatives of the future. The concept has strategic implication in the sense that two dimensions of national defense are inherent in any future Army concept designed to fulfill its assigned missions. The first is strategic mobility: the ability to deploy rapidly in response to a contingency, on short notice, anywhere in the world. The second and paramount strategic dimension involves the strategic nuclear equation which must be maintained for the Army's concept to have the desired impact in support of the overall national defense.

2. The Battlefield of the Future. We should expect the battlefield of the 21st Century to be dense with sophisticated combat systems whose ranges, lethality, and employment capabilities surpass anything known in contemporary warfare. The airspace over the battlefield will be saturated with aerial and space surveillance, reconnaissance, and target acquisition systems. Air defense weapons will exist to deny the use of these aerial platforms. The conflict will be intense and devastating, particularly at any point of decisive battle, thus making it extremely difficult to determine the exact situation. In such an atmosphere of confusion, command and control will be exceedingly difficult. It appears that no single weapon system can be fielded to cope with the total battle requirements. The battle will be waged with integrated systems of all arms and services. Battlefield mobility will be an absolute essential for success. One other aspect of the future battle is drawn from the growing

proliferation of nuclear, chemical, and biological weapons, coupled with the enemy's apparent permissive attitude regarding employment of these weapons. It is imperative that forces plan from the outset to fight dispersed on this "conventional-nuclear-chemical-biological-electronic battlefield." Additionally, the qualitative edge, once clearly enjoyed by the US is in danger. Recent Soviet expenditures in research and development have eroded the gap.

BATTLEFIELD CHARACTERISTICS

**LARGE QUANTITIES OF SOPHISTICATED
COMBAT SYSTEMS**

DIFFICULT COMMAND AND CONTROL

**NO SINGLE WEAPON SYSTEM WILL
DOMINATE**

**NO SIGNIFICANT QUALITATIVE ADVAN-
TAGE AVAILABLE**

**BATTLE EXPANDED INTO THE AIRSPACE
AND DEPTH OF ENEMY FORMATIONS
(300 + KM)**

**INTENSIVE BATTLE AT THE DECISIVE
POINT**

CHEMICAL / NUCLEAR / ELECTRONIC

3. Methodology employed to predict the required force: The characteristics and dimensions of the future battlefield were not visualized in the sterile atmosphere of a laboratory; nor can the necessary force which is capable of success on that battlefield be developed in a vacuum. We have postulated certain trends that we believe will affect society and specifically the military. Additionally, we have examined the conditions in the strategic regional areas of the world and produced a description of the environment for the 2000 time frame. After an examination of the trends and regional influences we have stated the courses which we believe will allow us to achieve the desired force to counter the threat on the battlefield of the future.

4. Threat and Area Assessment. See AirLand Battle 2000, 4 Sept 1981 (S).

II. PERESPECTIVE 2000.

1. Trends. The postulated trends are identifiable in the world today and will change the overall environment and present alternatives which the military must choose between in order to

prepare for action at some future time. While national programs are underway to reverse a number of the trends that are considered critical, e.g., US energy dependency and the dwindling industrial base, we cannot assume that these efforts will succeed. The following trends were considered significant and examined to determine their potential impact on the environment and more specifically their attendant effect on future battlefield characteristics.

TRENDS



- o Proliferation of Nuclear Technology
- o Increased Foreign Investment in Technology
- o Dwindling US Production Base
- o Decreasing US and Soviet Military Age Population
- o Increasing 3rd World Populations
- o Growing Worldwide Urbanization
- o More Diverse Lifestyles
- o US becoming Information Based Society
- o Soviet Power Projection
- o US and Soviet Investment Imbalance
- o World Political and Economic Interdependence
- o More Issues and Less Consensus
- o Decline in Earth's Capacity to Sustain its Population
- o Energy Dependency
- o Strategic Materiel Dependency
- o Proliferation of Arms

2. Environment. The trends, as listed above are often interwoven, if not dependent on one another. When examined as a whole, they tend to produce an environment as characterized below.

a. Balance and Diffusion of Power Uncertainty. Two nations, Russia and the US, emerged from World War II as superpowers. For the next three decades, the US, as leader of the Western world, held a clear superiority over the USSR in what was considered a bipolar arena. The long and costly war in Vietnam, coupled with a

ARMY ENVIRONMENT 2000

concentrated effort on the part of the USSR, eroded the gap to a point where uncertainty exists as to who actually holds the edge in the balance of power. Soviet emphasis today continues to be on increased military investment and projection of power to all areas of the world. There is no sign that they will change course in this century. In addition, the scarcity of energy and other critical resources and the attendant rise of other potential world powers from Third World status is signalling a shift to a multipolar situation, with several nations developing sophisticated armed forces and some possessing a nuclear capability.

BALANCE OF POWER UNCERTAINTY POLITICAL AND ECONOMIC CLIMATE ENERGY AND STRATEGIC MATERIALS NEW TECHNOLOGY DEMOGRAPHIC VARIABLES CHANGING SOCIAL CLIMATE

b. Political and Economic Climate. Splintering of traditional political parties and philosophies, the rise of powerful interest groups, increased economic interdependence caused primarily by the demand for natural resources, and numerous other factors such as ultra-fast communications have created a situation wherein governments have shorter and shorter periods of time to deal with problems that impact on domestic and international issues. Compounding the problem is the recent growth of giant international economic agglomerates that are pervasive influences in world affairs. They often act in support of purely economic interests and are not always in the best interests of nation-states. These diversities of interest tend to fractionalize domestic requirements and international relationships, making it difficult if not impossible to gain a national consensus on critical issues. Accordingly, in cases where consensus is lacking, the Army must independently conceptualize a course of action and direction which it believes will be dictated by the major components of national strategy.

c. Energy and Strategic Materials. As the world's appetite for energy sources and other strategic minerals increases and known reserves dwindle, competition for them could be the most significant environmental issue at the turn of the century. All industrialized nations require a continuous supply of these assets for survival. This resource dependence is complicated by the fact that the resource rich areas of the world, the Middle East, sub-Sahara Africa, and Latin America are in constant turmoil caused by divergent political interest and unstable governmental

systems.

d. War by Proxy. Not since the era of Machiavelli and the Italian mercenary system of warfare has the world experienced such blatant use of surrogate forces. As was briefly mentioned in the discussion of the balance of power, emerging third world nations are acquiring significant numbers of modern lethal weapon systems, developing more capable armed forces, and beginning to assert themselves in international affairs in ways that cannot be ignored. Through outright grants from willing governments and purchases from ready suppliers, third world nations will continue to acquire more modern equipment and in some cases possibly even a limited nuclear weapons capability. Proxy wars orchestrated by the Soviet Union and fought by surrogate forces are likely as the USSR continues to extend its influence, and the threat of nuclear war in any area of the world is increased.

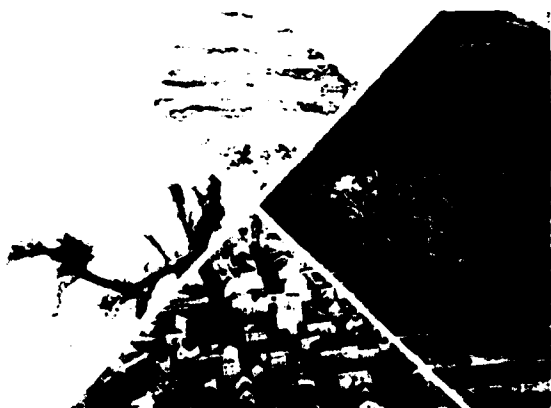
e. Technology. Exposure to technology is fast becoming an American way of life. Computers, microwave ovens, and children's electronic games are found in virtually every home. In industry, robotics replace manpower and more sophisticated computers assist in decision making and rapidly and accurately perform tasks once considered tedious. At the same time, developing nations, aided by relatively low wage scales, are becoming increasingly competitive in the traditional manufacturing industries previously dominated by the US and other developed nations. The shift of heavy production capability to nations that never possessed it is likely to continue in the immediate and near term future. To shield against this, the US should begin to exploit the advantages to be gained from the movement to technology. New and better ways of accomplishing tasks must be sought.

f. Demography. Latest forecasts indicate that by the year 2000, two billion persons will be added to the present world population of 4.4 billion. The population growth of the less developed countries will continue to soar, thereby affecting some of the other trends, such as scarcity of resources, balance of power diffusion and economic turmoil. In spite of the fact that the total population of the superpowers continues to increase, the military age group of both nations is decreasing. While the USSR can insure a constant military strength through conscription, but at a great expense to their non-military segment, the US is forced to compete with the civilian sector for its manpower. The Soviets alleviate this dilemma by the use of surrogate forces to project power. They can be expected to continue to do this in the future. Another aspect of demographic transposition worthy of note is the widescale movement toward urbanization which has been caused primarily by the rising industrialization of developing countries and the scarcity and cost of energy resources. This trend is especially notable in Western Europe where urban sprawl and strip areas replace a countryside once devoted to

agriculture.

g. Social Climate and the Information Revolution. The movement of some nations from an industrial based society to one of high technology exploitation is felt by some to usher in an era referred to as the Information Revolution. As a result of the increased demand for information and the proliferation of information processing systems, significant changes in our society are anticipated. Many of these will have profound impact on the military. Decentralization of information permits decisions to be made at lower levels but also makes it more difficult to gain a national consensus on issues. Work places may become decentralized and the requirement for a structured work day less meaningful. In essence, society may become highly individualized.

PREPARE TO FIGHT ANYWHERE



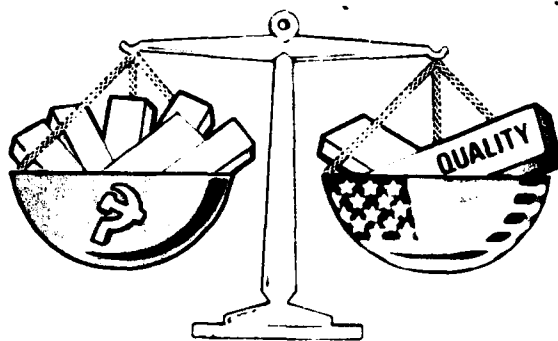
3. Future Implications for the Military. Through examination of the projected threat, the trends, and the strategic regional implications, it is possible to draw some implications for the Army:

a. Prepare to fight anywhere: While conflict against the WP in Central Europe remains the most dangerous threat to US security it is not considered the most likely. Resource dependency, the proliferation of arms to include a

nuclear capability among third world nations, and the worldwide turmoil caused by direct Soviet interference and their war by proxy methods makes it necessary for the US to develop forces which can operate in all types of terrain, climate, and types of warfare situations.

b. Win the Land Battle. As in the past, US forces can anticipate being employed to further or protect national goals or objectives. In that regard, it is important that once the political decision is made to commit forces, that something be won to provide a basis for favorable political settlement. The purpose of military operations cannot be simply to avert defeat or maintain the status quo, it must be to win.

c. Maintain Weapons Parity. Parity in numbers of weapons and forces can never be effectively gained against a foe such as the Soviet Union which traditionally devotes a major portion of its national resources to military power. Parity is gained through quality of weapons, reliance on technology, tactics, leadership, and national will.

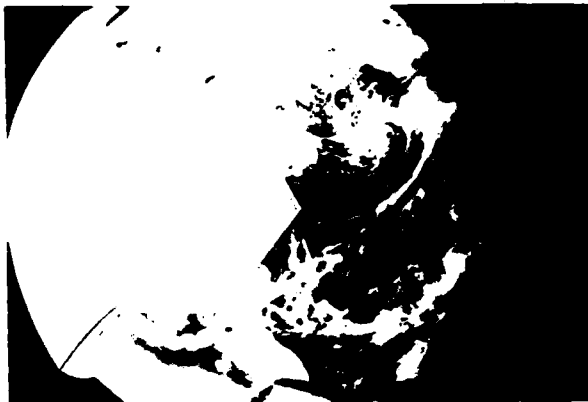


d. Avoid High Combat Losses. The highly lethal battlefield of the future and the overwhelming force potential of our enemies argues for avoidance of all out attrition style warfare. Victory must be sought through maneuver, advantageous positioning of forces, use of deception, psychological efforts to erode the enemy's will, and exposure of minimum friendly forces to destructive weapons effects.

e. Criticality of Initial Battles. Numerous world trends indicate that prolonged war may be a thing of the past. Certainly, the lethality of future weapons, the decline in the US industrial base, and our decreasing military age population all tend to argue against wars of a prolonged nature. The initial battles may well be so devastating that political settlement is sought early. It will be important then to be militarily ahead from the beginning to negotiate settlement from a position of superiority.

**PREPARE TO FIGHT ANYWHERE
WIN THE LAND BATTLE
WEAPON PARITY OF COMBATANTS
HIGH COMBAT LOSSES
CRITICALITY OF INITIAL BATTLES**

STRATEGIC MOBILITY



f. Develop Strategic Mobility. The widespread political and economic uncertainty will create many opportunities for conflict. The US will have to develop means to deploy, reinforce, and sustain forces worldwide. This will require a cooperative effort among the services to develop this capability.

4. Manning and Force Design Considerations.

a. The decline in the traditional military age population will impact on the manning of the future force. By the year 2000, approximately half of the population of the US is projected to be over age 40. Alternatives calling for reinstatement of conscription, the use of initial entry soldiers over 40, an increase in female percentage of the Army's total force or increasing the incentives to allow competition with the civilian sector are options that could be activated to fulfill the needs over a protracted time frame. However, the manning of the force is not dependent upon any one alternative for success. Any alternative initiated, either singly or in combination, can support this high technology, less manpower intensive force. The intent of the concept relative to manning the force structure is to reduce the number of people required. Relaxation of current maximum age retention policies would also tend to reduce input requirements. This policy change would also enhance the ability of small units to operate independently by providing stability of leaders who possess increased judgement and maturity, particularly at the mid-grade NCO level. Greater unit cohesion, due to reduced personnel turbulence, would be an important added benefit.

b. The battlefield described in the introduction requires highly mobile, firepower intensive maneuver forces which will be

capable of independent operation within the scope of a highly synchronized effort. The use of modern conventional, nuclear, chemical, biological, and electronic devices on the battlefield mandates the need for such organizations. The Western world has always tended to produce individualism--the ability to operate independently. Rewards have always been high for those who achieve the status of individuality. Soldiers will tend to put their loyalty, devotion, and resolve in the junior officers leading these small cohesive elements. Application of this trend, coupled with advanced technology, will allow the army to field mission sufficient units capable of fighting in any continuum of warfare.

III. THE AIRLAND BATTLE 2000 OPERATIONAL CONCEPT.

1. The Essence of the Concept.

a. AirLand Battle 2000 is an advanced evolutionary concept built on the current AirLand Battle doctrine. It is the implementation of the Concept Based Requirements System which will allow our future doctrine, organizational structuring, training techniques, and materiel acquisition to be directed by an operational concept that encompasses all aspects of the way the army intends to fulfill its responsibility to the nation. As the details of the AirLand Battle 2000 Concept are developed, they must be the driving force for other defense projects, such as, enhancement of strategic mobility and rapid deployment.

b. The salient feature of the concept is maneuver which enables a commander to place the enemy in a position of disadvantage through the flexible application of combat power. The object of maneuver is to concentrate or disperse forces and combat systems in a manner designed to place the enemy at a disadvantage, thus achieving results that would otherwise be more costly in men and materiel. At all levels, successful application of the concept requires not only fire and movement,

ESSENCE

**STYLE OF WAGING WAR IN WHICH
AGILITY, DECEPTION, MANEUVER,
FIREPOWER AND ALL OTHER
TOOLS OF COMBAT ARE USED TO
FACE THE ENEMY WITH A SUCCESSION
OF DANGEROUS AND UNEXPECTED
SITUATIONS MORE RAPIDLY
THAN HE CAN REACT TO THEM**

but also flexibility of thought, plans and operations, and the considered application of the principles of mass and economy of force.

2. Levels of Doctrinal Perspectives.

a. The Strategic Level. The United States must continue to adhere to the strategic objective of national security through deterrence. In pursuit of this objective, US forces must be configured for flexible and rapid response to the full spectrum of emerging threats worldwide. The ability to deploy large numbers of United States forces to any area is in itself a deterrent. In order of priority, the requisites for such a national military strategy are deterrence of Soviet nuclear attack against the US and its allies, the defense of European and Pacific allies and the ability to deal with lesser contingencies. To cope with these security challenges of the 21st century, we must continue to draw on the combined resources of allied and other friendly nations to full and mutual benefit.

STRATEGIC LEVEL

EMPLOYMENT OF ARMED FORCES OF A NATION TO SECURE NATIONAL OBJECTIVES. THIS IS DONE BY APPLICATION OF FORCE OR THREAT OF FORCE. IT IS FORMULATED BY THE NATIONAL COMMAND AUTHORITY IN CONSULTATION WITH THE ARMED FORCES. OBJECTIVE IS TO WIN SOMETHING.



It is at this strategic level that psychological operations and other related actions have their most profound impact. These types of operations should commence when, through signs of mobilization or other activities, it becomes clear that the enemy is preparing to initiate hostilities. These actions concentrate on the disruption of the enemy's warfighting potential. Actions aimed at creating disunity among nations of the WP and exploiting tensions between the Slavic and minority members of the Soviet Army are examples.

Obviously, cooperation between political and military authorities will be required to insure unity of effort.

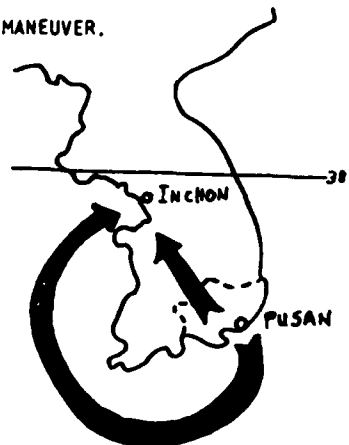
b. The Operational Level. The operational level, which is the connecting link between strategy and tactics, is the art of conducting the Airland battle through the application of maneuver. It is characterized by the repositioning or displacement of large units (corps and above in today's terminology). The object of maneuver at the operational level is to force maximum strength against the enemy's weakest point thereby gaining strategic advantage. At the operational level, maneuver is generally characterized more by movement than fires. The term "operational level", used to describe a certain segment of warfare, was commonplace in the doctrine of some European armies, developed to a high degree by the German forces, and often practiced successfully within the US Army. Historical examples are: Grant at Vicksburg; MacArthur's "island hopping" campaign in the Pacific and Patton's race to the Rhine during World War II; and from the Korean War, General MacArthur's landing at Inchon. the operational level of warfare has the following objectives:

- o To force an enemy to change his dispositions prior to battle to meet a threat he has not anticipated.
- o To separate enemy forces, thus allowing defeat in detail.
- o To use advanced weapons and maneuver to eliminate the enemy's operational options.
- o To cause indecisiveness within the enemy command structure.

Effective use of maneuver warfare enables a weaker force, through continuous employment of forces, speed, surprise, firepower, and deception to be stronger at the decisive point. Given the

OPERATIONAL LEVEL

THE THEORY AND PRACTICE OF LARGE UNIT OPERATIONS TO ATTAIN STRATEGIC GOALS WITHIN A THEATER OF WAR. USUALLY PRACTICED BY ARMY GROUPS AND CORPS. IT IS THE PLANNING AND CONDUCT OF CAMPAIGNS. GROUND, AIR, AND SEA ELEMENTS ARE COORDINATED TO DEFEAT THE ENEMY BY MANEUVER.

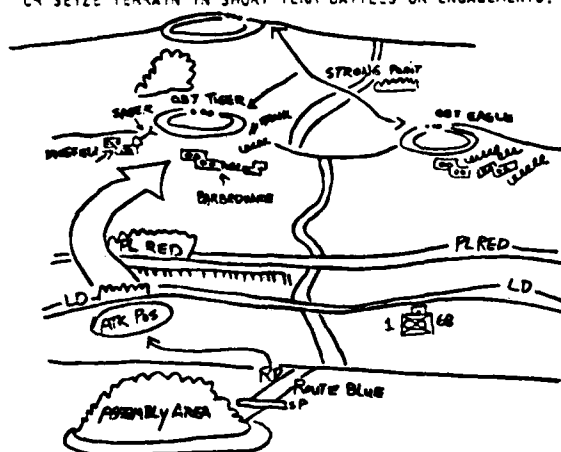


possibility that the US may have to divide its forces to cover multiple contingencies, portions of the Army may not enjoy superiority of firepower, equipment, or numbers. In such cases, understanding and applying the principles of the operational level of warfare will allow US forces to fight outnumbered and win.

c. The Tactical Level. The US Army's current doctrine draws upon the notion of the integrated and extended battlefield

as expressed in AirLand Battle doctrine. The AirLand Battle 2000 Concept is evolutionary in that it builds on the strengths of the Airland Battle doctrine. The full potential of acquisition, targeting, and weapons systems is realized to attack the enemy deep in his rear. His timetable is disrupted and gaps are created in the main battle areas which can be exploited by maneuver. At this level, maneuver contributes significantly to sustaining the initiative, to

TACTICAL LEVEL
TECHNIQUES USED BY SMALL UNITS TO DESTROY THE ENEMY
OR SEIZE TERRAIN IN SHORT TERM BATTLES OR ENGAGEMENTS.



exploiting success, to preserving freedom of action, and to reducing vulnerability. The essence of maneuver at the tactical level is a balance of fire and movement. The tactical level is usually limited to battlefield situations characterized by:

- o decentralized execution by small self-sufficient units,
- o blend of firepower and movement
- o continuous operations, and
- o need to see and strike deep.

The concept envisions a number of small battles within the context of a single corps-type battle where the full range of air and land force systems are brought to bear on the enemy formations to the full depth of the battlefield.

3. Essential Principles of the Concept.

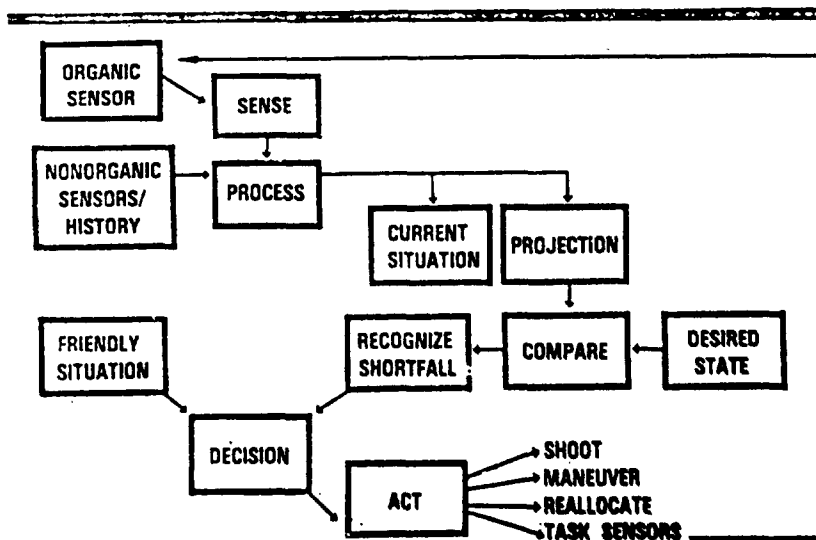
a. Agility. There must be agility ingrained in every thought and action. It must be built into every system, organization, and procedure used on the battlefield. We must be able to see,

analyze, decide, and act faster than the enemy. Utilizing the right combination of maneuver, economy of forces, and early identification of decision points will keep the enemy off balance. If we can change the situation in a relatively short period of time throughout the length and depth of the battlefield, the enemy's ability to react will be affected. It is essential that this

- **SEE, ANALYZE, DECIDE AND ACT FASTER THAN THE ENEMY**
- **OF THOUGHT AND ACTIONS BY ALL COMMANDERS**
- **KEEP THE ENEMY OFF BALANCE BY CONTINUALLY PRESENTING HIM WITH NEW SITUATIONS**
- **MISSION SUFFICIENCY**

process be performed much faster than the enemy commander can react. It is not necessary to destroy every opponent in detail; however, destruction of portions or all of the enemy's fighting strength may still be required. Agility must be exploited to place friendly fighting forces in the most advantageous position to do this, at the same time exploiting every opportunity to confuse, frustrate, and degrade the enemy's ability to react.

COMMANDER'S DECISION PROCESS



b. Initiative. Inherently, this ingredient is linked with agility and deals with the development of an offensive spirit. Inculcated in this principle is the constant vigilance for windows that allow offensive action; a constant search to seize and retain offensive momentum.

Mission oriented command

and control must be

instilled in combat

leaders at all levels.

Small unit leaders

exercise initiative by

taking decisive action to

execute established

tactics and techniques

without direction from

superiors. Larger unit

leaders execute innovative

plans and operations based

on their "sensing" of the

overall battlefield

situation. It must be

clearly understood that

risks are necessary to

exploit enemy

vulnerabilities and commanders must seize every opportunity to attack after recognizing and assessing the risk versus the gains to be made.

- **INDEPENDENT ACTION BY SUBORDINATES**
- **RISK TAKING TO EXPLOIT ENEMY VULNERABILITIES**
- **MANEUVER VS MOVEMENT OR MOBILITY**
- **OFFENSIVE SPIRIT**
- **SEIZE AND RETAIN INITIATIVE**
- **DECIDE AND ACT QUICKER THAN THE ENEMY**

c. Depth. Another critical principle of the concept is the extension of the battlefield in terms of time depth and utilization of resources. This aspect has application at the operational and tactical level. At the operational level, the commander orchestrates the maneuver that will bring the proper

combat power to bear on each phase of operations creating a synergistic effect to help offset any imbalance in force size. Momentum of the attack must be maintained through continuous operations and logistical readiness. If it is necessary to go over to the defense, then the defensive scheme should be highly elastic, never allowing the enemy to be sure of the

- **TIME, DISTANCE AND RESOURCES**
- **EXTENDED BATTLEFIELD**
- **MOMENTUM IN THE ATTACK**
- **ELASTICITY IN THE DEFENSE**
- **USE OF TERRAIN**
- **CONTINUOUS OPERATIONS**
- **STATE OF MIND - RESOLVE, LEADERSHIP, COMPETENCE, COHESIVENESS**
- **ORIENT ON THE ENEMY**
- **LOGISTICAL READINESS**

situation, and pressure must be maintained throughout the depth of the enemy formations. This principle would be applied in the same fashion at the tactical level, although events and situations would change at a greatly accelerated pace. To implement this principle fully, it is necessary to create a state of mind in all participants that incorporates total resolve, trust in the leadership, confidence in one's own ability and a total appreciation of the mission.

d. Time. The principle of time has application in every facet of the future battlefield. Interdiction throughout the

depth of the enemy formation depends on time if the results are to be maximized. Destroying a unit headquarters just before it deploys its forces and you have disrupted the enemy; hit too soon or too late and the effect is minimal. Maneuver would also be affected by time. If offensive action is initiated too late then the chance of success is reduced. Gain control of time and the enemy plan is impaired.

ACCELERATED INFORMATION PROCESSING

**REAL TIME ACQUISITION/PRIORITIZATION
OF TARGETS**

NEAR INSTANTANEOUS DECISION MAKING

RAPID DISSEMINATION OF ORDERS

QUICK EXECUTION OF ALL TASKS

ALMOST SEE INTO THE FUTURE

e. Synchronization. Synchronization of operations means more than coordination. It is the result of an all pervading unity of effort throughout the force so that no efforts are wasted. Every act of every element flows from a clear understanding of the higher commander's intentions. The result is synchronization of force.

OF ACTION IN TIME AND SPACE

**UNITY OF EFFORT - ACTIONS OF
ALL ELEMENTS IN HARMONY
WITH THE COMMANDER'S
CONCEPT**

**COMBINED AND SUPPORTING
ARMS**

INTEGRATED STAFF ACTIONS

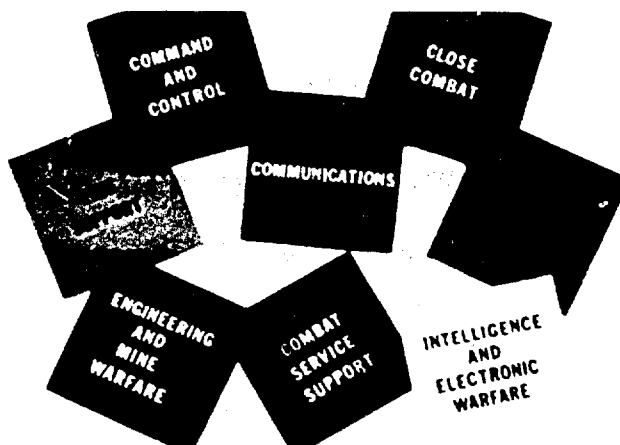
VIOLENT EXECUTION

f. The critical points of the principles can be summarized in the characteristics of the concept:

- o See deep
- o Move fast to strike
- o Seize the initiative quickly
- o Finish the tactical operation
- o Exploit successes
- o Begin the fight again
- o Decentralize execution
- o Target critical nodes

IV. FUNCTIONAL AREAS

1. The battlefield functions are discussed briefly below and found in their entirety in Annexes A-I. Initially, eight functional areas were envisioned and developed (Annexes A-H). During the AUSA Symposium conducted at the Army War College, a discussion group was established to deal with aviation as a separate functional area. The results of their work is attached as Annex I.



a. Command and Control. Addresses those capabilities for commanders to direct and synchronize combat forces to insure unity of effort. Initiative, rapid action and decentralized execution are enhanced through delegation of authority. Critical enemy targets are attacked at the proper place and time. Information processing allows informed decision making.

b. Close Combat. Based on maneuver of highly mobile, mission sufficient combat forces. The battlefield is organized in depth, extends full circle (360 degrees) and orients on the enemy. Seizing the initiative to conduct offensive action is key.

c. Fire Support. Process includes target value analysis and fire distribution to attack critical targets. Decentralized execution at the close combat (tactical) level - centralized

control for deep attack (operational level). Fire support means have a full range of capabilities from redundant and dispersed elements. Fire support will be more crucial than ever before.

d. Air Defense. Describes the defense of land forces in terms of counterair, preemptive air defense, and point defense of critical assets. Uses redundant systems to insure continuous operations. Decentralized operations at the close combat level; centralized operations at the airland level.

e. Communications. Describes a system for nodeless, redundant, sophisticated methods for rapid information exchange between echelons. Systems must be capable of operating in an EMP, NBC, or EW environment. Enhances the rapidity and agility of the commander's decision making process by providing discriminatory real-time information.

f. Intelligence and Electronic Warfare. Corrolates the efforts of all national and other service systems to look, listen, and sense information to the depth of enemy formations. Electronic warfare capability incorporated into all combat forces to deceive, disrupt, and destroy the enemy.

g. Combat Support, Engineer, and Mine Warfare. Encompasses the tasks of mobility, countermobility, and survivability functions which are designed into all forces. Capability to cross obstacles in stride is built into the required family of vehicles and systems. Countermobility operations include the employment of a family of scatterable mines through aerial and ground emplacement.

h. Combat Service Support. Addresses those efforts which directly relate to sustaining and concentrating combat power. Maintains combat agility and mission sufficiency through technological advances and improved support packaging.

i. Aviation. Encompasses those battlefield tasks related to aerial combat, aerial support of ground forces (including fire support) and aerial sustainment of forces. Function also includes aviation as a major form of maneuver on the battlefield.

2. In order to fulfill the requirements of the functional areas, a force with the following characteristics is required:

- o Small Self-Sufficient Organizations
- o Highly Mobile
- o Firepower Intensive
- o Less Manpower Reliant
- o Extremely Agile - Dispersion - Mass Capability
- o Capable of Fluid, Continuous Operations
- o Rapid Strategic Deployability
- o Extensive Use of Robotics

- o Micro-Electronic Technology
- o EW Incorporated in All Combat Forces
- o EW to Destroy, Disrupt, Deceive
- o Dedicated All Source Intelligence
- o Real Time Theater Intelligence
- o Mobility - Countermobility - Survivability Built In
- o Information Processing for Logistics
- o Less Fuel Consuming - Energy Efficient
- o Invisible Equipment (Multiple or Stand-off Signatures)
- o Knowledge of Position
- o Redundancy in Command and Control
- o Reconstitution Capability
- o Less Turbulent, Cohesive (Regimental System)
- o Design for War - Augmented for Peace
- o Family of Vehicles
- o Information Pushed to Commanders

V. SUMMARY AND CONCLUSIONS.

1. The world in which the military forces will be required to operate in pursuit of alliance or national goals in the 21st Century is expected to be one of increasing complexity and diversity of interests. We cannot know when or where our Army will be ordered into battle in the future, but we must assume that the likelihood of battle in regions other than NATO Europe is greater than ever before.

2. To counter the wide array of potential threats, US forces must be deployed to fight as part of a larger force; that is, as a deployed force in NATO Europe, a combined force in Korea, or as a force tailored to meet a range of contingencies in the Middle East, Asia, Africa, or Latin America. Introduction into an area of conflict must be rapid and with sufficient combat power to offset a concurrent buildup by threat forces. US forces of this period must capitalize on technology to gain the combat advantage yet simultaneously retain strategic mobility. The forces called for must be easily deployable and capable of independent, widely dispersed operations by employment of small, highly mobile, firepower intensive units that are mission sufficient throughout the continuum of warfare. The guidelines in this paper should be used to provide a focus for technology to allow the development of systems and organizations necessary to transition the Army into the 21st Century.

3. The decentralized, maneuver-oriented operational concept which is linked by a command and control philosophy based on mission oriented tactics will require the development of a new and innovative method of developing the officer and non-commissioned officer corps. Collective training will be more intense. Simulation will be used to improve individual skills. Leadership and unit cohesion will be established during training and will, therefore be in place in peacetime as well as in combat. Our

methods of recruitment and providing replacements must be aligned with the overriding need to maintain cohesiveness in the units. Further, elements of the Reserve, National Guard and active force must be totally subsumed into a single conceptional direction. It is the intent of the AirLand Battle 2000 Concept and its functional area concepts to bring about these changes by laying out the next evolutionary step beyond the present doctrine contained in AirLand Battle.



**"WARS MAY BE FOUGHT WITH WEAPONS,
BUT THEY ARE WON BY MEN. IT IS THE
SPIRIT OF MEN WHO FOLLOW AND OF THE
MAN WHO LEADS THAT GAINS THE VIC-
TORY."**

GEORGE S. PATTON, JR.

APPENDIX A

COMMAND AND CONTROL

PURPOSE. This concept describes command and control of operations in support of AirLand Battle 2000.

OPERATIONAL CONCEPT.

1. Command and Control (C²) is the exercise of authority and direction by a properly designated command over assigned forces to attain victory on the AirLand Battlefield of the 21st century. C² is exercised to employ forces and resources in such a way as to effect the collapse of the enemy's ability and will to continue to fight. The C² system acts as a single entity and consists of the commander, his staff, and supporting elements such as communications and intelligence.

2. The C² system has as its task to -

- Receive and analyze mission directives
- Gain and analyze information
- Estimate
- Plan
- Make decisions
- Prepare for operations
- Monitor, control, and coordinate operations

COMMAND AND CONTROL IS EXERCISED THROUGH:

- **COMPONENTS**
 - ORGANIZATION OF THE BATTLEFIELD (AREAS OF RESPONSIBILITY)
 - LEVELS OF COMMAND
 - SUBORDINATE COMMAND AND CONTROL SYSTEMS
- **ACTIONS**
 - ACTING FASTER
 - TARGETING
 - ORGANIZING FOR COMBAT
 - DECENTRALIZING EXECUTION

3. Organization of the Battlefield. The battlefield is organized into areas of responsibility. These areas constantly change to reflect the current situation and provide maximum flexibility to commanders. Commanders visualize the battlefield as "islands of conflict" where combat forces orient on the enemy and operate in a semi-autonomous mode. Combat forces attack, move, reposition and attack again. As a result, areas of responsibility are fluid.

BATTLEFIELD ORGANIZATION

- BASED ON
 - FORCE CAPABILITY AND MISSION
 - CLEARLY DEFINED RESPONSIBILITIES
 - 360-DEGREE ORIENTATION
- INCLUDES
 - AREAS OF INFLUENCE
 - AREAS OF INTEREST

a. Area of Influence.

Each level of command has an area of influence. Its size depends on force capabilities, situation, and mission. The

AREA OF INFLUENCE

- DECISIVE COMBAT
- ORIENTED ON ENEMY
- COMMANDER EXERCISES COMMAND AND CONTROL OF ALL SYSTEMS

designation of the area is designed to provide the commander maximum flexibility of maneuver. Within his area of influence, the commander exercises command and control of all organic and assigned systems to support his mission. This includes fire support and airspace to the maximum effective range of friendly air defense weapons. The commander has the capability "to see" the enemy in his area of influence, to target him, and to attack him with a myriad of fire support systems and maneuver forces.

b. Area of Interest. Each level of command has an area of interest. The commander has the capability to see into his area of interest, but relies primarily on the next higher level of command to attack the enemy in this area.

AREA OF INTEREST

- INCLUDED IN AREA OF INFLUENCE OF NEXT HIGHER COMMAND
- THE COMMANDER
 - GAINS INFORMATION
 - FORMS PERCEPTION OF ENEMY INTENTIONS
 - PLANS HOW TO CONFIGURE ENEMY

LEVELS OF COMMAND

- THEATER COMMANDS
- THE AIRLAND FORCE
- THE LAND BATTLE FORCE
- THE CLOSE COMBAT FORCE

unique information needs. Each level coordinates the activities of its subsystems through the communication and information architecture presently called the Command and Control Subordinate Subsystems (CCS²).

4. Levels of Command. Command and control is also exercised through levels of command. These are a series of organizational networks with both common and

a. Theater Commands: Theater commands, which may be combined or unified commands,

- Are established by the national command authority
- Serve as the senior headquarters in theater
- Are responsible for overall direction of strategic operations.

At paragraph 10 is a notional organization of a theater with two ALF's as they might be organized and employed.

b. The Airland Force (ALF). The ALF commander normally exercises command and control directly over its organic close combat forces (CCF). It may also employ a land battle force (LBF) to exercise command and control over the CCF's if the situation requires a reduced span of control. When employed, the ALF may also be assigned additional CCF's, as well as additional combat support and combat service support (CSS) assets as needed for mission accomplishment. USAF, USN, and USMC elements are assigned as needed giving the ALF a multi-service configuration and capability.

THE ALF:

- PERMANENTLY ORGANIZED
- CONDUCTS OPERATIONAL AND TACTICAL LEVELS OF WARFARE
- HAS ORGANIC COMBAT, COMBAT SUPPORT, AND COMBAT SERVICE SUPPORT ASSETS
- INTEGRATES, DIRECTS, AND SUPPLIES THE AIRLAND BATTLE
- SERVES AS TERMINUS FOR NATIONAL C² SYSTEM IN ABSENCE OF COMBINED OR UNIFIED COMMAND

c. The Land Battle Force (LBF). The LBF is a command and control element employed by the ALF commander to reduce his span of command and control over the CCF's. During combat operations, prior to employment, LBF command and control elements monitor all aspects of ALF operations to include planning for future operations so as to facilitate operations if and when they are employed. Throughout the remainder of this concept, little or no mention is made of the LBF when discussing organization of command and control and actions on the battlefield since the normal mode of operations is between

THE LBF

- IS A PERMANENTLY ORGANIZED ELEMENT ORGANIC TO THE ALF IS A TACTICAL COMMAND AND CONTROL HQ EXERCISES COMMAND AND CONTROL OVER SEVERAL CCFs HAS ADDITIONAL INTEL/IEW AND COMMO ASSETS REDUCES ALF SPAN OF CONTROL

the ALF and CCFs. However, all subsequent discussions imply employing the LBF as a tactical headquarters employed to assist in reducing the span of control with the organic CCFs.

d. The Close Combat Force (CCF). The CCF is the primary tactical combat organization that conducts decisive combat. The CCF is composed of an optimum mix of units organized to conduct and sustain operations over an extended period of time. In his planning, the CCF commander concentrates on configuring the enemy so that he may attack when he can mass superior combat power at the time and place of his choosing. The CCF commander configures the enemy forces before they enter his

CCF SUBORDINATE CONTROL SYSTEMS

- MANEUVER
- FIRE SUPPORT
- AIR DEFENSE
- INTEL/EW
- CSS

with command data and information links, all responsive to him, and also capable of coordinating with their counterparts at the ALF. In addition to defeating enemy forces in his area of influence, the CCF commander gathers intelligence pertaining to enemy forces in his area of interest. This intelligence permits him to plan his operations as the enemy approaches the CCF area of influence. To defeat the enemy he tailors his forces to form highly mobile maneuver forces operating as combined arms elements with appropriate slices of CS and CSS elements.

5. ²Command and Control Subordinate System (CCS²)
CCS² FUNCTIONAL AREAS

- MANEUVER
- FIRE SUPPORT
- AIR DEFENSE
- INTEL/EW
- COMBAT SERVICE

SUPPORT

information. CCS² was developed for the mid-1980 timeframe, but will be required in the year 2000.

SYSTEMS ORGANIC TO CCF

- MANEUVER
- FIRE SUPPORT
- ENGINEER
- INTELLIGENCE, SURVEILLANCE AND TARGET ACQUISITION
- ELECTRONIC WARFARE
- AIR DEFENSE
- COMMUNICATIONS
- BATTLEFIELD SUPPORT
- MILITARY POLICE
- AIR LIAISON ELEMENTS

area of influence by requesting support from the ALF commander. Within his own area of influence, the CCF commander exercises command and control employing his subordinate control systems. These controls are tied together

THE CCF

- IS HIGHLY MOBILE AND SELF SUFFICIENT
- CAPABLE OF INDEPENDENT OPERATIONS
- OPERATIONS ARE OFFENSE ORIENTED
- ORIENTS ON DESTRUCTION OF ENEMY, NOT RETENTION OF TERRAIN

tactical operations is centered around five major functional areas of responsibility, identifiable by functions performed. Each of these functional areas have operational facilities which manage, coordinate and process

a. These functional subordinate systems are tied together into force control system which enables the commander to acquire, process and distribute information.

b. CCS² is based upon a hierarchy of component systems operating in an aggregation of the five functional areas. Traditionally, each component system has been tailored to meet its own mission rather than on overall mission. In the year 2000, each component system functions as an integral part of, and in support of, the overall system.

CCS² MISSIONS
- PROVIDES INTERNAL
COMMAND AND CONTROL
- SHARES INFORMATION
WITH OTHER SYSTEMS
- PRODUCES KEY
INFORMATION FOR THE
COMMANDER

c. This system processes different types of information, in a disciplined manner, through and among battlefield operational facilities. The information is in three distinct types: technical, staff, and command related.

6. Acting Faster. The C² system, as a result of technological advances acts faster than the enemy can in all facets of command and staff actions. The dynamics of the battlefield, coupled with the need to attack the enemy before he can react, require rapid information gathering, analysis, decision-making, and dissemination. The system acquires information using all sources of ISTA and transmits it in near real time.

ACT FASTER
- ACT BEFORE ENEMY CAN
REACT
- ACQUIRE AND
DISSEMINATE INFORMATION
- ACCELERATE ESTIMATES
AND DECISIONS (DETAILED
ORDERS OBSOLETE)
- MARSHAL FORCES
RAPIDLY
- EXECUTE WITH AUDACITY

a. Use of secure communications and electronically produced, visually-displayed, rapidly transmitted mission directives and orders are a must for C². The rapid acquisition of enemy information is supported by computer-assisted cataloging by analysts for almost instantaneous intelligence estimates. Staffs do not conduct prolonged analysis. Brief estimates and firm conclusions of enemy intentions enable commanders to quickly decide on a course of action. The CCS² with extensive electronically produced graphics capabilities make detailed orders and directives unnecessary. The system provides information to subordinate commanders, using either electronic communications systems or back-up means such as couriers.

b. Commanders quickly marshal adequate forces and firepower at the critical point to defeat the enemy or cause his collapse,

and then move to prevent the enemy from reacting. Forces are tailored with CSS to sustain the forces in combat.

c. The commander is guided throughout his decision-making process by the principles of maneuver, decentralized execution of mission directives, maximum latitude of action by subordinate commanders and calculated risk.

d. Once combat operations have commenced, the C² system performs the following functions:

- Monitors, coordinates, and controls operations.
- Continuously and automatically provides subordinate commanders with information updates.
- Stands ready to support with additional assets as necessary.

e. Commanders establish liaison with subordinate elements. Commanders also establish command and control cells to act as alternative command posts.

f. During the conduct of combat operations, the commander does not hesitate to react to fluid situations by changing mission directives. The C² system quickly identifies "no-win" situations and commanders are prepared to break off operations if the likelihood of being decisively engaged at the wrong place or time exists.

g. The commander influences the battle by his personal presence on the battlefield. He is a highly mobile commander.

9. Targeting. Targeting is the process of determining the appropriate mixture and application of fire and maneuver and timing of such application against enemy targets, especially those targets offering the highest payoff."

TARGETING
- PERVADES ENTIRE
FORCE
- ASSISTS IN FIGHTING
CLOSE IN BATTLE
- ACQUIRES, DECIDES,
AND ATTACKS FASTER THAN
ENEMY CAN REACT
- ATTACKS SOFT SPOTS
AND CRITICAL NODES OF
ENEMY C²

a. Target selection pervades the entire force. Targeting not only applies to artillery and close air support, but encompasses all aspects of target acquisition, analysis, and the application of the optimum system or mix of systems to attack the target.

b. Targeting is a critical element of the C² system that permits the commander to fight both the close-in and the far and wide ranging battle. Within his area of influence, the commander is vitally concerned with acquiring and attacking targets of an immediate nature. However, the commander must also be aware of the battle outside of his area of influence. In his area of interest he must know what reinforcements or actions the enemy can carry out to influence the close in or area of influence battle.

c. The C² system focuses on acquiring targets, rendering decisions, and attacking the most critical and lucrative targets--quicker than the enemy can react.

d. Targets selected are soft spots in enemy formations, command and control, and supporting CS and CSS elements. Targets that are vulnerable, result in the highest payoff, and justify the risk are attacked. It is unnecessary to attack and destroy all elements of an enemy force. The enemy command and control system is the highest priority. If supporting fire or electronic measures, rather than ground forces can destroy or neutralize, the probability of fewer casualties and less risk results.

e. Because of the need for rapid target acquisition, analysis, decision-making, and attack, the close combat commander controls fire support systems within his area of influence. This includes fire support elements organic to the CCF, as well as systems assigned to support on a mission basis. Control by the CCF commander ensures highly responsive fire support and quick reaction capability.

f. The ALF is the main terminus for all targeting within its area of influence. The ALF commander is responsible for acquiring, identifying, selecting, and attacking those enemy forces in his area of influence. He is prepared to support the CCFs in the acquisition and attack of targets. To accomplish the attack the ALF commander has organic assets as well as other assets assigned to include multiservice forces. His targeting staff element coordinates with, and supplies data to the CCF, but does not control the assets organic or assigned to the CCF.

8. Organizing for Combat.

The CCF is the level at which close combat tactical operations are planned and executed. The ALF conducts long-range planning and all-source intelligence

gathering. It supports the CCF commanders by the allocation of combat and support assets. Regardless of level of command the following key points apply:

ORGANIZING FOR COMBAT

- RAPIDLY ASSEMBLED

FORCES

- MOBILITY PARAMOUNT

- SMALL UNIT, COMBINED

ARMS OPERATIONS

a. Because the battlefield is fluid, dynamic, continually changing and requires rapid assemblage of forces, small unit commanders are habitually task organized during the "heat" of battle. As they move from one battlefield engagement to another and one control element to another, there will be little time for detailed, face to face coordination. This requires simple standardized operating procedures. Rapid, secure, and redundant communications and visually displayed graphics assist in the interchange of information and the transmittal of plans, orders and directives.

b. Mobility is paramount. The swift gathering of forces on the battlefield in order to "act faster" requires a family of compatible, energy efficient air and land platforms capable of all types of cross-country movement uninhibited by terrain. These systems are highly mobile and provide protection for the combat, CS, and C² elements.

c. The C² system provides needed intelligence automatically to commanders. The CCF has the capability to absorb and use this intelligence to support close combat operations.

9. Decentralizing Execution.

All forces receive mission directives that may include large areas in which to maneuver. Based on the threat and the terrain, subordinate commanders have maximum latitude and flexibility of action.

Brief statements convey missions to subordinate elements which

execute missions according to the commander's intent.

DECENTRALIZED EXECUTION

- BRIEF, FLEXIBLE

MISSION DIRECTIVES

- FREEDOM TO EXECUTE

COMMANDER'S INTENT

- SELF - SUFFICIENT,

SMALL UNIT OPERATIONS

- SMALL, DISPERSED

COMMAND AND CONTROL

ELEMENTS

a. Since operations are conducted at the small-unit level, combat forces and battlefield support units, organic or assigned to both the CCF and the ALF, must be capable of being suborganized to support small units for extended periods of time. These elements possess mobility equal to that of the supported combat units. Additionally, support units are prepared to defend themselves against local or isolated attacks.

b. The need for expanded load-carrying assets is critical. Emphasis is on field maintenance teams with sufficient supplies to sustain the small unit for a specified period of time. Battlefield recovery is hampered by the lack of conventional front lines. Emphasis is placed on expendable or "throwaway" systems and modular component replacement systems.

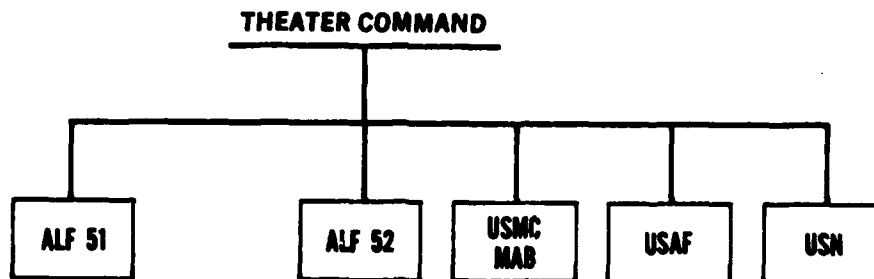
c. Personnel replacement is conducted by the ALF with unit rather than individual replacement being the normal mode.

d. As the battle progresses, assigned areas change rapidly. The C² system is sufficiently agile to control supporting assets in this fluid situation, using simple operational techniques and procedures. This situation requires that the close combat commanders be capable of controlling airspace within their respective areas of influence.

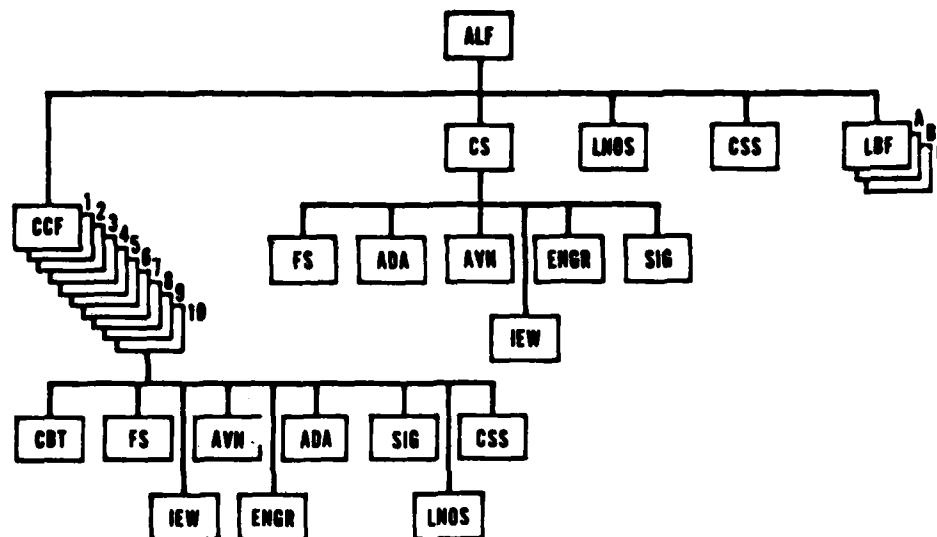
e. The C² system can operate continuously in a degraded communications mode. Small command post cells are available to operate as alternate CPs. Air platforms are capable of assisting in command and control in all environments.

10. In order to visualize the organization of the battlefield and the levels of command in relation to the battlefield in the 2000 time frame, a conceptual organization and how it might be task organized and employed follows:

Depicted below is a notional theater with 2 ALF's and other service assets as well as USMC amphibious brigade

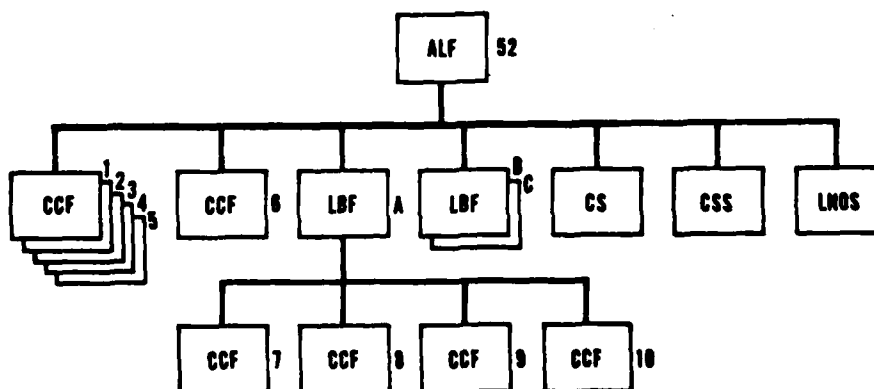


This shows a generic airland force with 10 close combat forces. It also has combat support, combat service support and three LBF commands and control elements with the ALF. It also has representation from other services. Each close combat force has organic combat elements as well as the other CS and CSS elements shown.

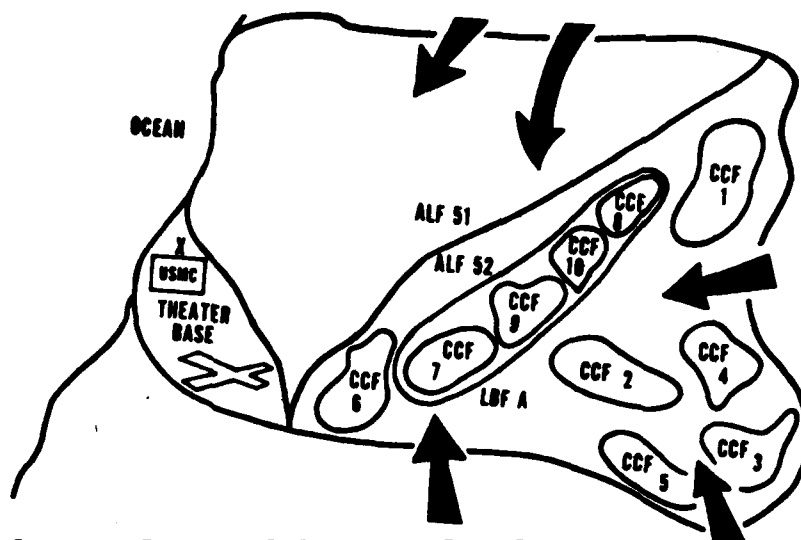


This shows in detail the 52d ALF, part of the theater command, as it might be task organized. In this case, the 52d ALF Cdr has employed LBF A to exercise command and control over CCFS 7, 8, 9, and 10. He has retained control over CCFS 1 through 6. He maintains LBF's B and C in readiness if needed to reduce his span of control.

TASK ORGANIZATION



Depicted is a notional battlefield for the theater with the task organization of the 52d ALF. The 51st ALF would be similarly deployed. The USMC Bde is theater reserve in the theater base area.



11. **Focus for Technology.** Successful command and control requires technologically superior systems for the 21st century battlefield.

a. The AirLand Battlefield of 1995 and beyond requires exceptional mobility for all combat and support air and land platforms. Chemical, biological, and radiological protection with a self decontamination capability and protection from small arms fire equivalents is provided on these vehicles.

FOCUS ON TECHNOLOGY
MOBILITY
SURVIVABILITY
COMMUNICATIONS
MANAGEMENT SYSTEM
DATA DISTRIBUTION
POWER SOURCES
COMMAND POSTS
AUTOMATION

b. Tactical communications equipment is smaller, lighter, EMP and ECM-resistant; has a reduced probability of intercept; is cryptographically secure; and does not display unique signatures. Tactical communications is transparent to the user but enables reliable communication at all times.

c. Management coordination and intersystem interface are achieved through the use of a common data base management system which facilitates information flow, standards, and procedures for passing information between these systems.

d. Integrated microprocessors are combined with communications. This allows filtering and multiechelon distribution of data to provide that information appropriate to a level of command.

e. Electronically produced, visually-displayed, rapidly, and securely transmitted graphics are used by the commander to disseminate his operations plans and orders to his subordinate commanders.

f. Built-in, energy-efficient, easily maintained and repaired power sources that are totally integrated into vehicles exist at all levels of command.

g. The conventional, nuclear, biological, chemical, and electronic lethality of the 1995 and beyond battlefield requires smaller, more self-sufficient command posts--smaller in terms of reduced personnel and vehicles, not necessarily reduced functions. Command posts can operate continuously in all combat environments and present non-unique signatures.

h. The following attributes are required for automation systems:

- Local and rapid programing capability.
- Voice recognition.
- Multiple path message routing.
- Access to all supporting data bases.
- Common decision graphics.
- "Fail-soft" degradation.
- Usable for peacetime administration and training functions.
- Hard-copy point-to-point messages.
- Word processing.
- Support decision-making only.

**APPENDIX B
CLOSE COMBAT**

PURPOSE. To describe the conduct of close combat operations in support of the AirLand Battle 2000 (ALB 2000).

OPERATIONAL CONCEPT.

1. General:

a. Close combat addresses those efforts directly related to the direction and generation of combat power by close combat forces (CCF) to defeat enemy forces in the area of influence. Close combat includes employing support weapons organic to maneuver forces (including nuclear and chemical weapons) as well as air support. Included in close combat are maneuver, target acquisition, battle control, target processing, target attack, and target attack assessment. Implied is the capability to seize and hold terrain if required.

b. Terrain and the commander's ability to use it to maximum advantage as a combat multiplier strongly influence where engagements will be fought. Close combat forces are structured to conduct operations in diverse terrain, weather conditions, and battlefield environments. Some CCF's are specifically trained for unique environments.

c. Close combat units are organized and equipped with sufficient command and control, communications, intelligence electronic warfare, fire support, combat support, and combat service support elements to permit the conduct of independent operations.

Sufficient tactical logistics, mobility, and firepower give CCF the capability to defeat the entire spectrum of enemy forces while retaining strategic deployability. Once deployed, close combat forces arrive in the area of influence ready to engage in combat operations immediately.

d. Close combat organizations are self-sufficient forces comprised of an optimal mix of organic and attached combat, combat support and combat service support elements. These forces are organized with an emphasis on tactical mobility in both day and night operations, complemented by systems necessary for survivability. Ground and air elements are integrated to identify and neutralize the effects of natural and artificial obstacles without impairing the conduct of tactical operations.

GENERAL

- o **TERRAIN IS COMBAT MULTIPLIER**
- o **CCF ORGANIZED FOR INDEPENDENT OPERATIONS**
- o **SMALL COMBINED-ARMS UNIT OPERATIONS**
- o **MULTICAPABLE WEAPONS**

e. Close combat concentrates on operations at the small-unit level, and tactical operations are conducted by combined arms elements possessing increased maneuverability and weapon systems lethality. Multicapable individual and crew-served weapons employed by men and robotics reduce the density in types of single capability weapons and ammunition. Special effect weapons which either destroy or temporarily incapacitate men and equipment are available for employment. Directed energy weapons are non-nuclear EMP generators, high energy lasers, millimeter wave transmitters, and other systems which use the electromagnetic spectrum. Protected manned and unmanned air and land platforms, e.g., RPV, are used in decoy, reconnaissance and attack roles. Robotic-operated equipment is substituted for manpower where feasible, e.g. laser designator, target acquisition, flamethrower, minesweeper, and reconnaissance equipment. Redundant communication systems designed to operate on the integrated battlefield i.e., a battlefield with nuclear, biological, chemical, and electronic hazards, are required at each level of command.

f. CCF commanders conduct combat operations orienting on enemy forces in the area of influence and extending in all directions. Close combat operations are oriented on seizing the initiative and concentrating highly mobile

direct and indirect-fire support weapon systems at the critical place and time to exploit enemy weaknesses. Rear area type combat operations are conducted by close combat forces oriented on that threat and able to exploit enemy vulnerabilities in a timely manner. If such forces are not available, all forces or means are prepared to engage the enemy force in order to continue the mission.

g. The lethality of modern weapon systems and the effectiveness of enemy's target acquisition systems require dispersion on the battlefield of close combat forces to enhance their survivability. Due to the accuracy, destructiveness, and number of modern weapon systems, commanders do not routinely risk massing large numbers of forces to conduct tactical operations. Yet they do maintain the capability to mass combat power on the enemy. Units are equipped and trained to react rapidly to the tactical situation in the direct-fire and indirect-fire battle, striking the enemy before his command and control structure can react to the changing situation.

h. The depth of the battlefield and the dispersed nature of close combat forces complicate the enemy's ability to correctly identify and evaluate the tactical situation. Obscurants rapidly dispensed from vehicles provide protection against homing and

- GENERAL
- o ROBOTIC - OPERATED EQUIPMENT
- o CCF SEIZE AND MAINTAIN INITIATIVE
- o BUILT UP AREAS

laser weapons as well as visually sighted weapons and target acquisition systems. Combat forces are only massed when the risk of chemical, biological or radiological attack decreases or when mission accomplishment justifies accepting a higher risk.

i. All close combat systems can operate continuously on an integrated battlefield. Likewise, supporting systems can maneuver continuously with organic combat service support; both incur only limited degradation in contaminated environments. Aerial platforms and land tactical vehicles provide a protected environment to maneuver in, or fight from, as appropriate. Internal automated land navigation systems permit accurate, continuous combat operations under conditions of restricted visibility. Dismounted operations are employed to defeat strong enemy resistance and when terrain or enemy disposition restrict adequate mounted maneuver. Specialized close combat operations (i.e., military operations on urbanized terrain, river crossing, etc.) are specialized only in the task organization and equipment required to conduct combat operations in those environments.

j. Combat support and combat service support systems insure the mobility, survivability, and continued full utilization of close combat forces. Combat service support units, as equally mobile and survivable as close combat units, perform support services as far forward among the close combat units as required. Imaginative planning, coordination, and communication with close combat units, instantaneous computer systems for determining logistical needs, and flexible response to the battle area insure that an acceptable pace is kept with maneuver units. Close combat forces attrited to levels of unacceptable combat capability are removed from the area of influence for unit or system reconstitution.

k. Operations designed to deceive the enemy and his target acquisition systems incorporate the use of obscurants, electronic measures, camouflage, and decoys to create the illusion of larger forces or portray false combat operations to an enemy commander. Operations employing deception reduce the time available to the enemy commander to analyze and understand a dynamic situation and to develop appropriate responses. Rapid movements, the use of obscurants, deception, and repeated attacks create the illusion of much larger forces, present rapidly changing target arrays, and overload the enemy intelligence system.

l. Close combat operations in builtup areas are a reality in ALB 2000. For example, in a European conflict when advancing along a designated axis, there is a potential for involvement in major build up areas on the average of every 50 kilometers. Because of this, enemy doctrine stresses the importance of bypassing cities and towns unless necessitated by strategic, tactical, or political reasons. If required, enemy forces are prepared to attack or

defend buildup areas. Likewise, the close combat commander prepares to operate in this very restrictive and close-range environment. The use of high-speed approaches, high-capacity bridges, and port facilities are all associated with urbanization. The CCF commander considers these impacts in his tactical plan and how urbanization affects his mission.

2. Offensive operations.

a. Offensive operations are characterized by rapid maneuver and aggressive assaults supported by the full spectrum of fire support assets.

Maneuver, one of the most important principles in conducting combat operations, permits rapid freedom of action for combat elements, reduces vulnerability, and may permit the attainment of objectives in shorter times with fewer resources. Although oriented on enemy forces and systems, units seize and secure terrain critical to continued combat operations. However, emphasis is on defeating the enemy - not securing terrain.

OFFENSIVE OPERATIONS

- o RAPID MANEUVER,
AGGRESSIVE ASSAULTS
- o CONTINUOUS PLANNING
- o OFFENSIVE SPIRIT
- o PHYSICAL AND
PSYCHOLOGICAL DEFEAT

b. Successful offensive operations depend not only on the ability to continuously project combat power, but on the ability to anticipate fast-moving demands, to plan accordingly, and to execute missions in an intense combat environment. CCF commanders at all levels plan and conduct bold, innovative tactical operations using friendly force advantages and incorporating available air, land, and water-based systems to exploit enemy vulnerabilities. Mission directives instantaneously transmitted to subordinate units permit centralized planning and decentralized execution to insure the timely exploitation of enemy vulnerabilities. Intelligence systems, designed to locate and identify enemy formations and critical support systems, see into the enemy rear beyond the tactical commander's organic capability. They also provide information to permit planning for continuous combat operations; this includes a capability to provide indications and warnings of projected employment of nuclear, biological, and radiological munitions by enemy forces. Through automated command and control support systems, timely and accurate information enhances the commander's ability to choose the best course of action to defeat enemy forces.

c. Target identification, analysis, and acquisition are accomplished in near real time at all command levels and in a format enhancing the tactical commander's decision making process. High-value targets are sought or created, identified, and attacked by appropriate systems consistent with the range and nature of the target and the commander's scheme of maneuver.

Enemy command and control and sensor and surveillance systems committed to the area of influence represent priority targets to be attacked by close combat forces or nonorganic fire support means.

d. The development and perpetuation of an offensive spirit permit tactical commanders to exploit the initiative. Implied is the requirement for ground and air tactical platforms which provide a degree of protection from enemy direct fires. Tactics designed to disrupt enemy planning and execution processes are employed to enhance the maneuver and weapon system lethality advantage of friendly close combat operations. Combat successes are exploited by conducting continuous ground and air operations oriented on the destruction of enemy forces.

e. Close combat forces are oriented on defeating the enemy through physical and psychological means. To preserve favorable friendly attack ratios and to create multiple enemy weaknesses contributing to his ultimate defeat, critical enemy systems -- nuclear delivery means, command and control etc. - and formations are attacked prior to their commitment. Unconventional warfare forces assist the close combat commander to see the battlefield, concentrate combat power, suppress the enemy's suppressive fires, and attack and destroy the enemy. Opportunities to attack are sought at every phase of the battle, and sufficient force and full-spectrum weapon systems are made available to attack and exploit enemy vulnerabilities. Close combat forces attacking to exploit enemy weaknesses can rapidly change the direction of attack to defeat enemy forces on the flank or to threaten the rear areas of engaged enemy forces. Such operations lead to the absence of a clearly defined front line. Thus, the amoeba-like area of influence has a broken, meandering, interrupted trace, and its configuration changes very rapidly. The rapid and frequent

OFFENSIVE OPERATIONS

- o NO DEFINED FRONT LINE
- o SYSTEMS INTEGRATION
- o MOVEMENT = FIREPOWER
- = KEYS FOR SUCCESS
- o INTEGRATED ENVIRONMENT

maneuvering of mobile combat forces is based on information gained from appropriate intelligence, reconnaissance, surveillance and target acquisition systems committed to the area of influence. This is accomplished simultaneously with the destruction of the enemy so as

not to reduce the tempo of the offensive. Aerially delivered combat forces acting in concert with mobile ground combat elements and fires contribute to the continuity of operations necessary for victory on the battlefield. Close combat forces delivered by organic aerial platforms and supported by assault aerial platforms, indirect fire, and tactical air elements are rapidly maneuvered to attack enemy high value targets throughout the depth of the battlefield.

f. To achieve the tactical mobility required to defeat the enemy in the area of influence, commanders integrate all available systems to support their tactical scheme of maneuver. The critical massing of all combat powers at the precise time and location to achieve victory requires well-led, well-trained, and multicapable units which are trained, equipped, and supported to fight 24 hours a day in all weather and visibility. Operations in a combined arms mode constitute the normal organization for all combat, combat support, and combat service support elements. Close combat forces are combat organized and equipment is designed to permit mission accomplishment with minimal resupply or operational phasing e.g., multicapable weapons and non-fossil fuel dependent equipment.

g. Close combat offensive operations are conducted throughout the entire area of influence to exploit enemy vulnerabilities. Close combat forces employing small-unit infiltration tactics with ground or air platforms orient on vulnerable enemy systems in any part of the area of influence and mass to conduct combat operations. The denial of enemy's mobility and his capability to control and support continuous combat operations are paramount objectives of offensive operations. The full spectrum of weapons effects including use of anti-materiel agents and sticky foams, are used to impose maximum degradation on committed enemy forces and his follow-on echelons.

h. Movement and firepower are integrated to isolate, disrupt, and destroy enemy forces and the integrity of his defense, as well as critical enemy weapons, combat, create opportunities favoring the execution of ground combat operations aimed at the rapid destruction or disruption of the enemy. Once the enemy's operational plan has been disrupted, close combat forces mount rapid, continuous multiple attacks from dispersed locations. Movement coupled with firepower is the key to offensive operations.

i. Nuclear and chemical weapons, when available and authorized for employment, operate in support of close combat forces fighting either dismounted or from the controlled, protected environment or air and ground platforms. During the conduct of nuclear or chemical operations, the primary missions of close combat forces are the rapid exploitation of nuclear or chemical strikes, the completion of the destruction of surviving enemy forces, and the seizure of specific objectives. Under these conditions, the decisiveness and scope of the offensive are multiplied, the times for the attainment of goals are reduced, and the significance of surprise is increased. If attacking forces are required to traverse contaminated terrain, they do so in protected air and mobile land carriers, thus denying the enemy any economy-of-force benefit from such obstacles. Contaminated areas and water barriers are not viewed as serious obstacles to the

conduct of combat operations. Combat vehicles with the means to cross water obstacles are capable of operating at full efficiency in chemical, biological and radiological environments. This is accomplished by installed radiation shields, chemical and biological protective and decontamination systems, or by a prophylaxis which protects the soldier against chemical and biological effects. Such systems permit the crossing of barriers in stride without reducing the momentum of attack. Organic close combat aviation assets and Air Force systems are fully integrated into the scheme of maneuver. These assets provide fires or insert dismounted forces to seize objectives on the far side of the obstacle.

j. Military operations in builtup areas are fought by small-sized close combat units in an environment with these characteristics:

- o Cities are complex and heterogeneous.
- o Nature of the city tends to favor the defender
- o A unique vertical dimension affects tactical planning.
- o Engagements occur at very short ranges.
- o A large number of noncombatants are present.
- o Intelligence collection is difficult for the attacker.
- o Most engagements are fought by combined arms forces.

k. In both the offense and defense, the city's structure determines the size of the combat unit and the tactics employed. The attacker faces these problems: as armor penetrates to the core, it becomes increasingly vulnerable to short-range antiarmor systems; the normal building-street pattern of the urban area reduces combat to "eyeball" range of 50 meters or less which, in turn, forces a high reliance on dismounted units using man-pack or team-pack equipment and employment light and lethal fire support systems. The vertical dimension restricts and slows the movement of the offensive force and has an extremely adverse effect on command and control and communications; close air support may or may not be employed. The CCF commander counters these problems by using smoke extensively; employing short-range fire support weapons sighted to penetrate any obscurant such as smoke, fog, or rain and equipped with penetration munitions with delay fuses; using a communication system which is effective in any terrain; pinpointing hostile fires regardless of the firer's location; and employing antitank weapons which have short-arming distances and can fire from enclosures. Additionally, the CCF commander has better control of his unit via small vector-thrust platforms which

provide a protected airlift capability. Large-scale maps and aerial photographs of each building immediately provided to the CCF commander permit him to better visualize the situation. Transparent protective canopies for armored vehicles allow 360 degree direct visibility. The unique vertical dimension of the urban area offers advantages and disadvantages to the close combat force. The inner city or urban core with its solid walls and large buildings imposes severe restrictions on combat operations. Buildings reduce the effectiveness of area fire support and require precision in locating and pinpointing targets. Tall buildings, however, have the potential value as prime sites for observation and communication centers, commanding considerable segments of urbanized territory. By occupying tall buildings, the defense force benefits from good observation and sniper positions. It can then force its opponent to clear an objective area building by building, thus slowing the attacker.

3. Defensive operations.

a. Friendly defensive operations in the area of influence are designed to deny enemy's mission accomplishment and destroy his remaining combat capability. Defensive operations are conducted to develop the proper environment for the initiation or continuation of offensive operations. The CCF also conducts defensive operations to gain time, to canalize the enemy, to maximize the disadvantages of the terrain on an attacking enemy force, to conceal intentions, or to properly develop or prepare the battlefield for destruction of the enemy by both physical and psychological means. The defense is organized in depth to bring the total combat power available to bear on every phase of the enemy's operations. During defensive operations, the defender retains the initiative and adversely influences the ability of the attacker to conform to his operational plans. He does this by conducting limited objective counterattacks, employing air support, direct and indirect fires, repositioning forces rapidly, and using prepositioned and dynamic obstacles to modify the terrain. Fire and movement are as important to defensive operations as to offensive operations. Unconventional warfare forces assist conventional defensive operations by providing accurate and timely intelligence from deep within enemy territory. These forces may divert enemy units from tactical employment by blocking approaches to an objective, interdicting and attacking enemy forces and facilities. Whenever possible, reserve forces are retained to allow the close combat commander to take advantage of the opportunity to seize the initiative and mount offensive operations.

- DEFENSIVE OPERATIONS
- o COMPLEMENTS OFFENSIVE OPERATIONS
- o RETAINS INITIATIVE
- o DYNAMIC OBSTACLES
- o MUTUALLY SUPPORTIVE OF OTHER CCF
- o CAPITALIZE ADVANTAGES FACING ATTACKER
- o EMPHASIS ON FLEXIBILITY

b. Close combat forces orient on the retention of critical terrain as it impacts on the close combat force commander's tactical plan and his ability to maintain the integrity of his defense or is required for successful completion of offensive operations. The integration of dynamic obstacles into defensive operations enhances the countermobility value of the terrain and increases the vulnerability and degradation of the enemy. Close combat forces effectively integrate all facets of the environment (urban areas, forested areas, mixed-to-open and rolling-to-flat terrain, etc.) into defensive operations by tailoring available forces and employing multicapable systems.

c. If feasible, defensive operations conducted in one CCF area of influence are planned and coordinated to be mutually supportive of offensive and defensive operations conducted by other CCF operating in contiguous areas of influence. Coordination between CCF operating in various islands of conflict permits the application of combat power throughout the depth of the enemy's formations to achieve maximum advantage.

d. The CCF commander seeks to strike a balance between defensive and offensive tactics when conducting defensive operations. Even in the defense he is offensively oriented and perpetuates offensive action at every opportunity. This includes retaining the capability to quickly shift combat service support to support the offensive. Tactics are employed by the CCF which maximize the disadvantages (primarily of terrain) facing an approaching enemy force. Thus, the CCF commander considers how to best capitalize on the disadvantages of natural and manmade obstacles, the disorder and chaos prevailing in continuous combat, and the psychological advantage an aggressive defense has on the enemy. This ability coupled with knowing when and how to assume the offensive at the proper time and then taking it promises the most important results.

e. ALB 2000 does not prescribe a particular form of defense; this is largely dependent on the mission, the enemy, and the terrain. Emphasis is on the dynamic defense or a defense characterized as a non-static, ever-changing operation which maximizes the mobility of the CCF, strikes at the approaching enemy's most vulnerable areas, and deceives the enemy. The CCF commander uses his advantage of controlling critical terrain and better knowledge of the ground to strike the enemy with repeated, unexpected attacks. He defeats the enemy's combined arms by degrading his strength and ability to concentrate combat power, and destroys or disrupts the enemy force with quick and aggressive movements supported by flexible fire support. Enemy attempts to support his attacks with suppressive indirect fires are countered by armor-protected antitank guided missile launchers. Fire-and-forget missiles incorporating on-board modular seekers acquire and track targets without the aid of a ground-based raider, thus yielding greater accuracy and enhancing fire survivability.

4. Continuous combat.

a. Continuous combat is the capability to wage modern warfare without interruption for those reasons that traditionally force a pause in combat activity--night, fatigue,

inadequate logistics sustainment, and similar considerations. The enemy's philosophy concerning continuous combat operations espouses an offensive conducted day and night, in any weather, and without let up until the enemy is defeated. ALB 2000 CCF doctrine, tactics, employment techniques, organization, and equipment embody this philosophy. Continuous combat is the norm, and the ability to conduct continuous combat provides a deciding gain to the commander to do something when it needs to be done. Essential combat operations or supporting actions are not postponed until daylight because they are either traditionally risky or too difficult to perform in darkness.

CONTINUOUS COMBAT

- o WAGE WAR WITHOUT INTERRUPTION
- o THE NORM
- o RECONSTITUTION
- o DAYTIME EFFECTIVENESS
- o ALL WEATHER AIRCRAFT

b. To conduct continuous air and land combat includes a capability to provide continuous logistical support to the force on a 24-hour basis for prolonged periods without loss of efficiency. It also includes initiating or conducting operations regardless of duration, at anytime during a 24-hour period. Both capabilities contribute significantly to a commander's operational flexibility.

c. Continuous operations require using terrain and weapons in night operations with effectiveness comparable to that attained in daylight operations. This is a prerequisite for conducting continuous operations. Navigation and position-location equipment not dependent on electromagnetic radiation provides information to the user at any time of the day or in any state of visibility.

d. Continuous combat involves air and land forces working together with interaction and dependency extending into every function of combat. Because of this, the implications of fighting without pause or letup also apply to aviation assets. Aircraft possess both a night and adverse weather capability in conducting reconnaissance and battlefield interdiction operations and in providing close air support and tactical airlift.

e. A chemical, biological and nuclear defense is built into all organizations and equipment on the battlefield. Individual, self-contained booth-like stations decontaminate personnel by using recirculating fluid sprays, ultrasonics, and high volume forced air. Survivability shelters incorporate positive air pressure, self-sealing characteristics, and NBC filters. Oral and intravenous vaccines provide prophylaxis against many agents.

Large areas of terrain are decontaminated by foam-sprays which contain the vapor hazard, visibly mark the "hot" areas, and neutralize the agents. NBC reporting is done by use of the position recording and reporting system and is immediately reflected on all situation maps.

f. The implications of conducting continuous combat operations are enormous. The nature and support of land combat are affected and are not simply added considerations. Fundamental to continuous combat operations are:

- o Psychological and human factor considerations. Machines can be made to operate continuously--men cannot. Individual and unit training is essential to turning fear and strangeness of night combat, which are exaggerated by fatigue and stress of sustained combat, into an advantage. Effects of sleep loss, adaptation to the night environment, and rotation of personnel are key considerations. The commander knows the endurance level of his staff, his troops, and his equipment. The regular relief of close combat forces is a continuing requirement, and it is provided for in the commander's plan.

- o Since continuous land combat is as dependent on continuity of support as it is on continuity of operations, training demands for night and continuous combat apply equally to combat support and combat service support units.

- o Continuous operations significantly increase logistical needs vis-a-vis replacement of equipment, components, supplies, and maintenance.

OTHER CLOSE COMBAT FORCE CONSIDERATIONS.

1. In ALB 2000, the CCF commander simultaneously engages numerous enemy targets, strikes swiftly at enemy vulnerabilities, sees and attacks deep, continuously plans for future operations, and orchestrates all CCF assets toward winning the battle. These topics were addressed in previous paragraphs. The CCF commander, however, has other tasks to perform which contribute to the successful conduct of ALB 2000. These tasks include:

- a. Security of high-value assets.
- b. Obstacle bypass, route reconnaissance, and traffic control.
- c. Circulation control of noncombatants if host-nation support is limited or not available.
- d. Handling enemy prisoners of war (EPWs).

d. Handling enemy prisoners of war (EPWs).

2. Security of high value assets includes measures taken to protect high-value combat resources not protected by the user, additional protection provided to the user in the area of influence, and security of captured high value assets. Examples are escort of air defense artillery assets, physical security of nuclear weapons and sensitive class V, security of command and control headquarters and sensitive communications centers, and protection of patient care units and maintenance activities in the area of influence during times when assigned medical and maintenance personnel are performing primary duties.

3. Day and night obstacle bypass identification and route reconnaissance of lines of communications linking the close combat force with the logistical base provide the CCF commander and higher headquarters with vital information to keep the logistical lifeline open. Traffic control reduces congestion and permits an expedient and orderly flow of traffic to correct destinations. Route reconnaissance conducted by aviation and military police assets provides immediate information on specified routes and adjacent terrain from which the enemy can influence movement. This information includes reports of road conditions, bridge outages, ford sites, defiles, and restrictions to movement.

4. Circulation control of civilians, especially in and around buildup areas, requires cooperation between civilian governmental agencies and close combat forces to preclude congested high-speed approaches and to provide a degree of safety to large numbers of noncombatants traveling thereon.

5. Handling of EPWs includes collection, accountability, temporary internment, and evacuation. The extremely lethal and high-intensity-type battle characteristic of ALB 2000 increases enemy casualty rates and decreases enemy capture rates (as compared with previous wars). The autonomous, independent nature of CCF operations, however, can cause problems in EPW handling, especially when other variables are considered. These variables are fluidity of the battle, increased sustainability of small-sized units in close combat forces, continuous operations, and the deep attack into enemy territory. All of these can impact on the ability of the CCF commander to evacuate EPWs from the area of influence. For these reasons, a requirement exists to expeditiously evacuate EPWs. This requirement is considered by both the force planner when organizing close combat forces, as well as the CCF commander when executing his mission.

6. The requirements enumerated require a tailored, versatile, highly mobile force which also gives the CCF commander added flexibility in putting out small fires anywhere within the area of influence.

CLOSE COMBAT FORCE PLANNING CONSIDERATIONS.

1. ALB 2000 may be fought in any area of the world when it is deemed necessary to protect US national interests. Forces encountered in contingency areas may range from ill-equipped guerrilla forces to modern Soviet or Warsaw Pact forces. Close combat forces are organized, equipped, and trained to cope with the entire

spectrum of the potential enemy threat. Land, air, and sea assets (organic as well as Air Force and Navy systems) are integrated in each operational phase of combat execution.

2. To effectively meet the challenge of ALB 2000, close combat forces rapidly deploy as an integral force capable of conducting sustained tactical operations under all environmental conditions. Systems are lightweight and compact yet can engage and defeat the foremost enemy capability. The combat planner, faced with tailoring a combat force for diverse tactical operations in differing environments, plans systems which are lightweight and compact while simultaneously balancing the requirements of accuracy of firepower systems, mobility, ease of transportability, timeliness of the effort, and the intensity of required support to the force. These imperatives are considered:

a. What is to be done? Is the mission to win battles, or to defend, contain, or conduct a show of force?

b. Is the force sufficient? The force is organized and equipped to meet the threat.

c. Is there an adequate employment concept?

d. Can the force be deployed? In time?

e. Can the force be sustained?

f. Are there reserves for another commitment?

g. Are there necessary arrangements for staging or interfacing with the host nation, host nation support, etc.?

3. The size of the area of operations, the terrain and how these factors impact on the ability of a close combat force to accomplish the mission are also considered, i.e., if the area is

PLANNING CONSIDERATIONS

- o RAPID DEPLOYMENT
- o LIGHTWEIGHT AND COMPACT
 - o ACCURATE
 - o MOBILE
 - o TRANSPORTABLE
- o AREA SIZE AND TERRAIN
- o USE OF NBC AND ELECTRONIC WEAPONS
- o SPECIALIZED FORCES
- o CIVIL AFFAIRS AND PSYOPS
- o OPPOSED ENTRY

too large and the force is overextended, then the mission may change from destruction of the enemy to harassment, interdiction, or containment. Other impacts involve the CCF's ability to mass fires against the enemy force and to lessen timely response to enemy vulnerabilities. The CCF commander considers the possible use of chemical, biological, radiological and electronic weapons by surrogate or Third World forces in their attempts to achieve a force multiplier effect. The CCF commander's use of agility, quick maneuver, and synchronization of action, and planning and executing countermeasures and tactics limit or reduce the effect of the enemy force potential.

4. In addition to the total integration of land and air assets in all operational phases, close combat forces include specialized combat forces capable of conducting a variety of conventional and unconventional operations. These include performing daring, lightning action raids into high-value target areas to accomplish special missions, organizing and employing surrogate forces, and tailoring the force to operate in sophisticated environments, e.g., urban areas; port and terminal complexes; industrial areas; or predominantly rural, mountainous, or desert areas. Additionally, employment of civil affairs and psyops are considered, especially in unconventional environments. Activities associated with winning popular support impact heavily on the success of combat operations. Employing area and functional specialists in support of close combat forces greatly assists in attaining objectives not otherwise attainable.

5. If entry facilities into an area of operations are denied, close combat forces conduct opposed entry operations. These forces are organized and trained to initiate operations from land, air, or sea and are equipped to sustain those operations until augmented or relieved by linkup forces. The rapid deployability requirement is balanced against an organic force capability to engage and defeat heavier enemy forces. Assault forces possessing a high degree of tactical ground, air mobility or airborne capability are best suited to conduct initial security operations aimed at seizing and securing airfields and ports to facilitate the buildup phase. The situation may dictate that lighter forces seize the initial objectives, followed as soon as possible by heavier forces to enhance accomplishing tactical objectives.

6. Completion of the deployment and lodgment phases establishes conditions for the further introduction of combat forces. These forces initiate tactical operations aimed at securing friendly preparations for subsequent operations to defeat the enemy. Tactical mobility permits close combat forces to control an enlarged base area and conduct in-depth security operations. Against heavier and well-organized enemy forces, heavier friendly force augmentation may be required to defeat the enemy and restore stability.

FOCUS ON NEEDED DEVELOPMENTS TO IMPLEMENT ALB 2000.

1. General.

a. The essential elements for the CCF achievement of continuous combat are doctrine, organization, training, equipment, and technology. All these elements interact with the others, but doctrine is the driving element. If continuous operations are the norm in ALB 2000 combat, then it must become a present-day keystone in doctrine and military thinking. Organization is derived from, and based upon, doctrine; training is then directed toward its implementation; equipment and weapons provide the means; and technology puts the edge on the weapons and can provide superior equipment. The capability for continuous combat that is made possible by advanced technology can be realized only by forces that are properly organized, trained, and equipped.

o Tables of organization and equipment and basis-of-issue plans are considered when writing doctrine which allows shifts of personnel throughout a 24-hour period for night and continuous combat.

o Since continuous land combat is as dependent on continuity of support as it is on continuity of combat operations, imaginative, interesting training applies equally to all units, i.e., close combat, combat support, and combat service support.

o Maneuver and support units are able to operate day and night in an chemical, biological, radiological environment for as long as necessary and to move rapidly regardless of obstacles, water barriers, minefields, contamination, or nuclear blowdown.

b. The combat battlefield of 1995 and beyond is an area in which the combatants either have employed, are employing, or have the capability to employ nuclear, biological, chemical, electronic, and directed-energy as well as conventional weapons. The battlefield is considered to have this potential from the very beginning. Therefore, no distinct transition from conventional to nuclear and chemical operations takes place. Chemical, biological, nuclear weapons do not negate the concept of continuous combat; rather, friendly employment of nuclear and chemical weapons or employment of nuclear, biological and chemical weapons by the enemy dramatically alters the character of battle by creating mass casualties and physical damage in a relatively short time span. The survival against such fires depends on the status of protective measures in being at the time of attack; the state of training, discipline, and leadership in the unit; and the execution of preplanned actions to restore the force and prevent exploitation by the enemy. To counter this, these considerations are made:

- o Operations emphasize dispersion and mobility.
- o Operations utilize offensive tactics against enemy columns whose second-echelon forces have been delayed, disrupted, or destroyed by nuclear, chemical, or conventional fires.
- o Advanced technology is specifically directed to the requirements of defeating the enemy's ability to conduct continuous offensive operations.
- o There is a balanced nuclear, chemical war-fighting capability, not simply nuclear weapons and the means to shoot them.
- o A continuous process of intelligence preparation of the battlefield provides a comprehensive and complete data base of enemy, weather, terrain, and obstacle information. This tool, properly used in electronic warfare and chemical, nuclear employment planning processes, provides the commander with real-time information to defeat the enemy.
- o The employment of electronic warfare disrupts the enemy's use of the EMP and his effective use of the electromagnetic system.

c. All systems are designed to support close combat forces by enhancing the CCF's ability to conduct uninterrupted combat and supporting operations 24 hours a day at a near daylight level of intensity. When both opponents attain this capability, continuous combat becomes the normal mode of land warfare.

2. Doctrinal perspectives. Close combat forces are primarily tactical in nature. They see, analyze, decide and act faster than the enemy can react with the ultimate goal of killing the enemy. Strategic and operational perspectives are maintained in how, when, and where tactical close combat forces are deployed.

3. Human dimensions. The intensity and lethality of the battle, coupled with an emphasis on a high-technology fighting capability, require special human considerations.

a. Battle intensity requires:

- o Stress reduction.
- o Rest on the battlefield.
- o Greater individual control of body functions.

b. High technology requires:

- o Simplistic man and machine interface.
- o Simplistic operation of complex systems.
- o Training to fight on the integrated battlefield.
- c. To act faster than the enemy reacts requires:
 - o Leaders who can act in the absence of specific orders.
 - o Superiors who encourage and support subordinate decision making.
 - o Strong esprit de corps at all levels.

4. Training and readiness. Close combat forces train as they are required to fight. The stress of the battle (integrated battlefield, unexpected situations, independent actions, and continuous operations) is duplicated or replicated in training. System simulations place the soldier in battle, and all members of the close combat force cross-train within the unit--all are fighters. Commanders learn to adjust to force packaging options in which their close combat force may be organized.

FOCUS ON TECHNOLOGY.

Close combat operations in the year 1995 and beyond require sophisticated and lethal weapon systems which are simple to employ, operate, maintain, easy to transport, and mobile. These systems are required:

1. Fire-and-forget precision-guided missiles.
2. Occupant-protected environment equipment and vehicles which provide a protected environment for occupants and critical components.
3. Electronic deception systems.
4. Survivable C² systems.
5. Obstacle neutralization systems.
6. Dynamic obstacles.
7. Robotics
8. Directed-energy weapons and support systems.
9. Lethal and nonlethal chemical weapon systems.

10. Special effects weapons.
11. Multicapable weapons.
12. All vehicles multifuel capable and have the means available to cross water obstacles.
13. All vehicles operate at full efficiency in chemical, biological, and radiological environments.
14. Protected remotely piloted air and land platforms.

APPENDIX C
FIRE SUPPORT

PURPOSE. To set forth the operational concept for the conduct of fire support operations in support of the AirLand Battle 2000 Concept.

OPERATIONAL CONCEPT.

1. Fire support:

- Is all fires other than those provided by maneuver systems used in their primary role,
- Includes the command, control, and coordination capability to integrate fire support with maneuver,
- Enhances maneuver combat strength,
- Includes processes and efforts directly related to the generation and application of indirect fires and aerial platforms,
- Has the purpose of destroying, degrading or suppressing the enemy,
- Possesses an array of munition effects which can be used against any possible combination of targets,
- Provides fires within the area of influence of the supported commander,
- Has mobility and survivability comparable to that of the supported force,
- Preserves the warfighting strength of the force.

2. The fire support system:

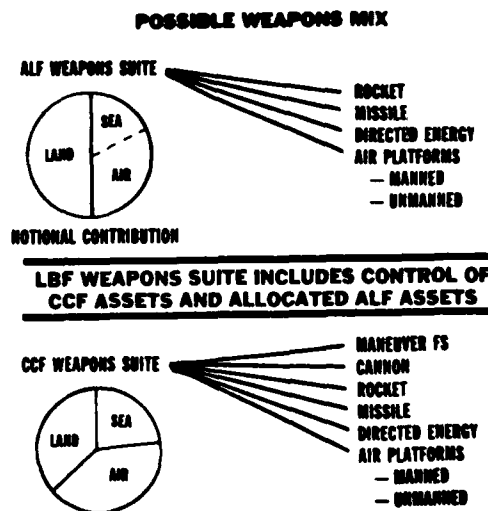
- rapidly focuses fire support at critical points and can be rapidly shifted to create opportunities,
- Provides the extended range to affect the enemy to the depth of the his formation
- Causes a reaction by the enemy that will in turn make him vulnerable to another equally timely means of attack,
- denies capabilities essential to the enemy commander's mission accomplishment,

- allows the force commander to counter significant threats to his ability to accomplish the assigned mission,
- has the capability of providing "stand off" support to deep maneuver forces,
- is complementary, redundant, flexible, optimized and substitutable.

3. Fire Support

is capable of **Rapid Deployment**. Once deployed,
is capable of **Effective Employment** to support the force, and
is capable of **Long Term Sustainment**.

4. The possible mix of weapons supporting the air land force (ALF) and close combat force (CCF) includes a full range of current and evolving technologies. Chart at right depicts the notional contributions of land, sea and air operating systems for both the ALF and CCF. The intermediate headquarters, the land battle force command does not have organic attack assets (it does have an FSE). When formed, the land force would generally assume control of assets from subordinate close combat forces and assets provided by air land force. Particular attack system density is governed by the system range and threat array.



MUNITIONS AND EFFECTS CAPABILITIES

TARGETS*	DESIRED EFFECTS**
POINT HARD	KILL
AREA SOFT	KILL/NEUTRALIZE
AREA HARD	KILL/NEUTRALIZE
EMITTERS	SELECTIVE KILL/NEUTRALIZE
BATTLEFIELD ENVIRONMENT	DENY/RESTRICT/MODIFY

*TARGETS — DISTRIBUTED ACROSS BATTLEFIELD AND ENGAGED BY ALL COMMAND LEVELS AS APPROPRIATE

**EFFECTS ARE

- MUNITION SELECTABLE
- TAILORED TO TARGET GEOMETRY

5. The fire support system has the capability of engaging targets and achieving the effects shown in the chart at the left. The targets are engaged as appropriate by all levels of command within their area of influence. Effects are selectable and capable of being tailored to the geometry of the targets.

6. Fire support is an integral part of the force level C² architecture. The fire support, control and coordination function serves as the interface between each force level, CCS, and supporting attack systems. Being resident at each level it also acts as a vertical fire support stovepipe within the force. There is not a separate and distinct fire support control and coordination entity, rather it is provided by the command and control of subordinate attack systems primarily field artillery.

7. Fire Support Control and Coordination (FSC²) System

- Provides the supported commander the means to coordinate all fire support within his area of influence (see chart at right).

- Gives the force commander the mechanism to provide the fire support assets to subordinates and to employ retained assets in support of his specific goals and objectives.

- Has the capability to selectively link one or more attack systems with specific acquisition systems to permit the engagement of specific types or groups of targets.

- Provides the force wide application of the target value analysis (TVA) process. The TVA is a fundamental tool used by fire planners to gain insight into the most appropriate mix of munition's and delivery systems as matched to Fire Support tasks. The process recognizes that a target's value is situationally dependent - deriving its value from both the supporting force commander's goals and the capabilities and limitations of the enemy force.

8. The Fire Support System survives the environments of battle to include the direct effects of enemy action, and the general effects of combat such as fatigue of men and machines.

- a. At the weapons system level, survivability is enhanced by OPSEC and employment of tactics to be where the enemy thinks you won't be, and by being unseen but if seen to have sufficient on-board protection to absorb or negate attacks.

- b. At higher levels, survivability results from the complementary support of subsystems.

FIRE SUPPORT COORDINATION

THE FIRE SUPPORT CONTROL AND COORDINATION FUNCTION SERVES TO ASSIST THE COMMANDER IN THE COORDINATION OF FIRE SUPPORT WITHIN THIS AREA OF INFLUENCE

- SHARES COMMON BATTLE PERCEPTION
- EXISTS AT ALL LEVELS OF FORCE COMMAND
- DIRECTS THE FORCE FIRE SUPPORT SYSTEM
- INSURES OPTIMUM EFFECT FROM AVAILABLE SYSTEMS
- INCORPORATES
 - SYSTEMS — (ARMY, AF, NAVY, ETC.)
 - MUNITIONS — (LETHAL/NON-LETHAL)
- PARTICIPATES IN THE COORDINATION OF
 - DECEPTION OPERATIONS
 - FS DELIVERED MINES/SENSORS, ETC.

*FS IS COORDINATED BY THE FSCoord AND INTEGRATED BY THE G-3

Internal reconstitution efforts are constantly oriented on regaining full operational capabilities. This reconstitution consists of resupplying personnel and equipment or restructuring for organizational cohesion and reestablishing lines of communications from within organizational assets. This is accomplished at all levels of command. External reconstitution is accomplished as described in Appendix I (Combat Service Support).

a. At each level of force command, a fire support coordinator provides that commander an interface into the total fire support system. It is the fire support coordinator's job to insure that fires available to the force are employed in consonance with the goals of the commander. This includes the proper distribution of organic elements and utilization of allocated resources.

C-4

his battle, which includes and is supportive of the battle of his subordinate CCFs.

11. The currently envisioned follow-on concepts include:

Field Artillery Attack Systems. In addition to providing the force continually available fires, the field artillery also has a target acquisition component and a support and sustainment component. The field artillery command and control system performs the fire support control and coordination function (FSC²) at all force levels.

USAF. The Air Force provides both aerial lethal attack means and nonlethal attack means. These are accessed and coordinated by the Fire Support Command, Control and Coordination (FSC²) function. The FSC² function can also access data bases of the Air Force such as intelligence.

USN/USMC. These services provide both aerial and surface to surface lethal and nonlethal attack means. They are accessed and coordinated by the FSC² function which can also access data bases such as intelligence data bases.

Organic, maneuver unit firepower. The FSC² function assists the force commander in integrating the fires of maneuver systems organic to the maneuver unit. These include purely indirect fire support systems and maneuver systems employed in a fire support role such as ADA or aerial platforms.

Electronic combat. The FSC² function assists the force commander in integrating the actions of electronic combat systems with the fires of the force.

Allied systems. Allied fire support systems are generally accessed through the C² system of comparable US fire support system. The FSC is designed with sufficient flexibility to permit direct interface with the allied system.

Munitions developments. This concept will address the types and capabilities of munitions (effects) available to the force from the total system. It will attempt to indicate which attack system should have specific effects capabilities.

12. Technological Opportunities.

a. C²

- Explore non-electronic means of communications
- Electronic deception systems
- Automated Assistance

- Support C² of autonomous weapons systems
- Identify and establish human interface nodes
- Establish Force level Data Base Management System

b. Weapons and Ammunition

- Common munition propulsion (include non-chemical energy)
- Explore directed energy applications.
- Wide range of munition effects options (selectable)
- Improve lethality
- Rapid Sustained Fire
- Weapons platforms capable of autonomous operations.

c. Target Acquisition

- Passive sensors - combat vehicle mounted
 - Nettable to FSE
 - Capable of autonomous support to fire units
- Selective access to other acquisition products
- Capability to acquire long range passive targets

d. Support and Sustainment

- Explore Robotics and Materiel Handling Equipment (MHE)
- Common parts and tools
- User oriented packaging of ammunition
- User selected multi-function black boxes
- Remote resupply/recovery

APPENDIX D

CONCEPT FOR AIR DEFENSE

PURPOSE. This concept describes the air defense function in support of the AirLand Battle 2000 Concept.

MISSION

- AIR DEFENSE WILL PROVIDE PROTECTION FOR VITAL ASSETS AND MANEUVER FORCES AGAINST AIR & SPACE THREATS.
- THREATS INCLUDE:
 - HELICOPTERS
 - PRECISION-GUIDED MUNITIONS
 - TACTICAL BALLISTIC MISSILES
 - CRUISE MISSILE
 - AIRCRAFT
 - TODAY'S CAPABILITIES
 - STRATEGIC SURVEILLANCE SYSTEMS
 - REMOTELY PILOTED VEHICLES
 - RECONNAISSANCE
 - DECOY
 - DESTRUCTIVE
 - SATELLITE

OPERATIONAL CONCEPT. The term "air defense" is used to describe all the multiservice functions traditionally associated with counterair, antiair, air defense and some of the functions of space defense. The air defense function includes efforts directed at destroying, disrupting or degrading the effectiveness of enemy air-breathing systems, tactical missile systems, and satellites used for reconnaissance or attack of friendly facilities, personnel, and systems.

Air threats are countered through a combination of offensive and defensive capabilities. The scheme of maneuver, threat composition, asset value, and the need to optimize the expenditure of our weapons are all factors in the employment of air defense weapons. A combination of weapon systems, tactics, and techniques are used to defeat air threats at critical points during their employment cycle. To accomplish air defense functions, enemy air vehicles must be engaged on the ground prior to launch, while airborne prior to their engagement of the target, during and after engagement of the target, while returning to recovery sites, and while being refueled and rearmed. Air and ground-based fire support and special operating forces counter air threats and enemy air forces prior to launch. After launch, air threats are detected and timely warning information (location, density, direction of attack, and capability) is passed to appropriate air defense forces and friendly forces or assets that are probable targets. The air defense force employs a balanced

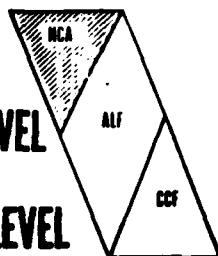
and survivable defense consisting of emission controlled diverse sensors, command and control facilities, and a complementary family of weapons systems to include interceptor aircraft. A mix of sensor technologies, varying attack mechanisms, and a balance of range and altitude capabilities limit enemy capabilities to capitalize on a particular weapon system's vulnerability. The air defense capabilities of the year 2000 and beyond are used to protect critical functions associated with the strategic, operational and tactical levels of war.

DOCTRINAL PERSPECTIVES

● STRATEGIC LEVEL

● OPERATIONAL LEVEL

● TACTICAL LEVEL



programs which are aimed at improving air defense capabilities in friendly nations, are politically driven programs that can impact significantly on worldwide air defense requirements. Military capabilities protect the sustaining base, strategic lines of communications, national defense and retaliatory capability, and the area surrounding high - technology sensors and communications. Assets used to accomplish strategic air defense include ballistic missile defense, interceptors, ground

1. Strategic Level.

The National Command Authority (NCA) and the highest command level within the theater of operations direct actions to accomplish long-range national objectives. These objectives are achieved through economic, political, and military actions. Strategic Arms Limitation Treaties, foreign aid programs, and foreign military sales



Strategic AD System

STRATEGIC LEVEL

- OBJECTIVES DETERMINED BY NATIONAL COMMAND AUTHORITY
- LONG RANGE OBJECTIVES
 - PROTECT SUSTAINING BASE, NATIONAL ASSETS, LINKS TO THEATER FORCES
 - STRATEGIC RESOURCES
- GLOBAL
- NATIONAL AND THEATER AIR DEFENSES
 - INTERCONNECTED
 - INTERDEPENDENT

based air defenses, and strategic intelligence and sensor assets. National and theater air defense systems are interconnected at the strategic level and are interdependent.

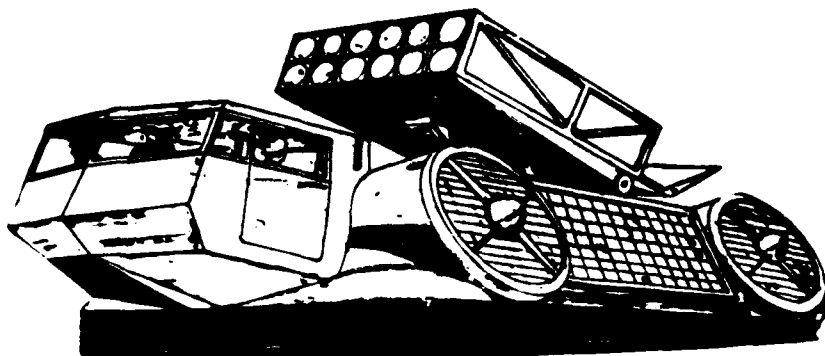
OPERATIONAL LEVEL

- OBJECTIVES DETERMINED BY THEATER COMMANDER TO LAND BATTLE FORCE COMMANDER
- INTERMEDIATE TO LONG RANGE OBJECTIVES
 - FREEDOM OF MANEUVER FOR MAJOR FORCES
 - AIR SUPERIORITY
- AREA AIR DEFENSE
- INTEGRATES AND ALLOCATES
 - MULTISERVICE AD CAPABILITIES
 - MULTINATIONAL AD CAPABILITIES

2. Operational Level. Multinational and multiservice air defense capabilities are integrated at the operational level. Operational objectives are determined by the senior military command level in theater down to the land battle command level. Operational level air defense usually supports two general objectives: freedom of maneuver for major forces and air superiority. To accomplish these objectives, enemy air defense command and control, long-range sensors and weapon systems

are attacked early in the war. Follow-on campaigns focus on enemy command and control, air vehicles, space vehicles, and missiles that can inhibit major force maneuver. Attacks on enemy airfields, missile launch sites and their supporting facilities, and operations against aircraft in their attack cycle are planned and directed by the Airland Force command level. Airland Force (ALF) air defenses complement the air defense capabilities of close combat forces and defeat air threats that bypass or survive

close combat force air defense. Fire support functions in support of air defense operations are directed and integrated at the AirLand Force command level.



AirLand Force Missile System

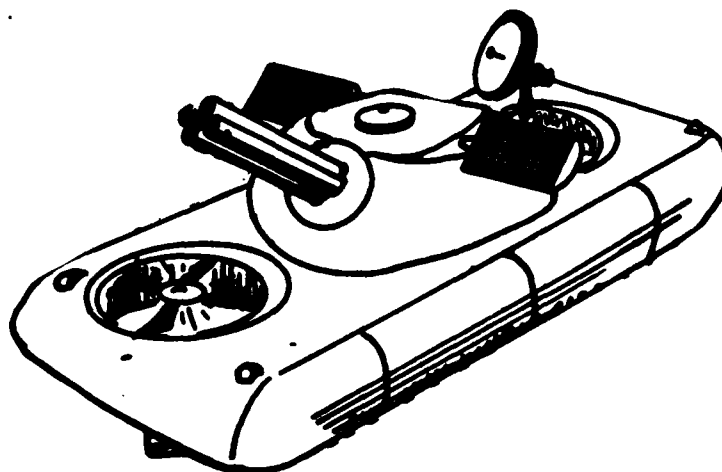
TACTICAL LEVEL

- OBJECTIVES DETERMINED BY AIRLAND FORCE COMMANDER TO CLOSE COMBAT FORCE COMMANDER
- SHORT TERM OBJECTIVES
 - FREEDOM OF MANEUVER FOR CLOSE COMBAT FORCE
 - DEFENSE OF VITAL ASSETS
- TERMINAL AIR DEFENSE
- EXECUTES MISSION
 - ORGANIC ASSETS
 - ALLOCATED ASSETS

3. Tactical Level.

Tactical objectives are usually short term and are established by AirLand Force (ALF) command levels down to close combat force (CCF) command levels. ALF tactical objectives for air defense include terminal defense for critical assets such as reconstitution forces, lines of communications, airfields and ports. The primary objective for air defense at the close combat level is to provide CCFs freedom of maneuver. Organic and

supporting air defense, offensive counterair, and fire support functions are coordinated to accomplish this tasks.



Close Combat
Force Gun System

4. Command and Control. The essence of AirLand Battle 2000 is rapid and responsive coordination between close combat elements and higher echelons. In addition to providing the means for coordination, the command and control (C²) system is the linkage by which command cells and functional area representatives capitalize on opportunities to seize the initiative. Air defense C² networks or systems are capable of performing detection, identification, and early warning functions. All source intelligence data bases and air defense intelligence systems are interconnected. Air defense C² provides essential alerting and fire distribution information to air defense fire units and interceptors. It insures engagement of priority targets, precludes inadvertent simultaneous engagements, and facilitate exchange essential data between air defense forces. Command and control systems are based upon a common reference grid in order that changes in control parameters can be immediately understood by all members of the force. Netting sensor capabilities permit real-time integration between air defense and other battlefield functions. Air defense C² is based on the principle of centralized control and decentralized execution. However, the degree of C² centralization is a function of the ability of the weapon system to react to external control, the threat volume, the state of communications, and the location of the particular airspace being considered. Close combat force air defense is fully capable of operating independently from higher echelons if necessary. While not essential to its effective operation, netting with ALF air defense C² to get the complete air picture optimizes operations. Because warning time is increased, and emissions from organic active acquisition sensors can be minimized. ALF air defenses usual mode of operations is centralized with the complete air picture available. The ALF AD commander establishes and modifies

LEVELS OF COMMAND

AIRLAND COMMAND (OPERATIONAL)

- ARMY NAVY AIR FORCE ASSETS
- REINFORCE CLOSE COMBAT FORCE AS REQUIRED
- TERMINAL AREA AIR DEFENSE
- COMPLEMENTS CLOSE COMBAT COVERAGE

LAND BATTLE COMMAND (IF REQUIRED)

- AIR DEFENSE STAFF ELEMENT
- REQUESTS AIRLAND ASSETS AS REQUIRED
- INTEGRATES CCF AIR DEFENSES IF REQUIRED
- NO ORGANIC AIR DEFENSE

CLOSE COMBAT COMMAND (TACTICAL)

- ORGANIC AIR DEFENSE
- TERMINAL PROTECTION

airspace management procedures, identification criteria, and rules of engagement for all air defense forces operating within his assigned area of responsibility. If the airland battle command's span of control over attached close combat forces becomes too large, command and control elements called Land Battle Forces (LBF) will be detached from the ALF and will serve as

command and control headquarters for a specified number of CCFs. These land battle commands will have certain assets, including augmented air defense staff elements, to allow them to perform these air defense C² functions. The land battle command monitors the close combat air situation with its air defense staff element

and requests assets from the ALF to as required. Land battle commands have no organic active air defense assets. However, they have the capability to combine and integrate subordinate CCF air defense if the mission requires enhanced capabilities. Each land battle command headquarters element receives its own air defense protection from ALF assets or by satelliting on a subordinate CCF for protection. ALF air defense C² organization provides for:

(a) Centralized planning and the capability of decentralized execution of plans to counter enemy air threats.

(b) Electronic countermeasures and control means compatible with all services command, control and intelligence systems.

(c) Rapid reaction, to include the ability to task, retask, and reallocate air defense resources assigned or attached to ALF excluding close combat forces.

(d) Warning to friendly military forces and civil authority, as appropriate.

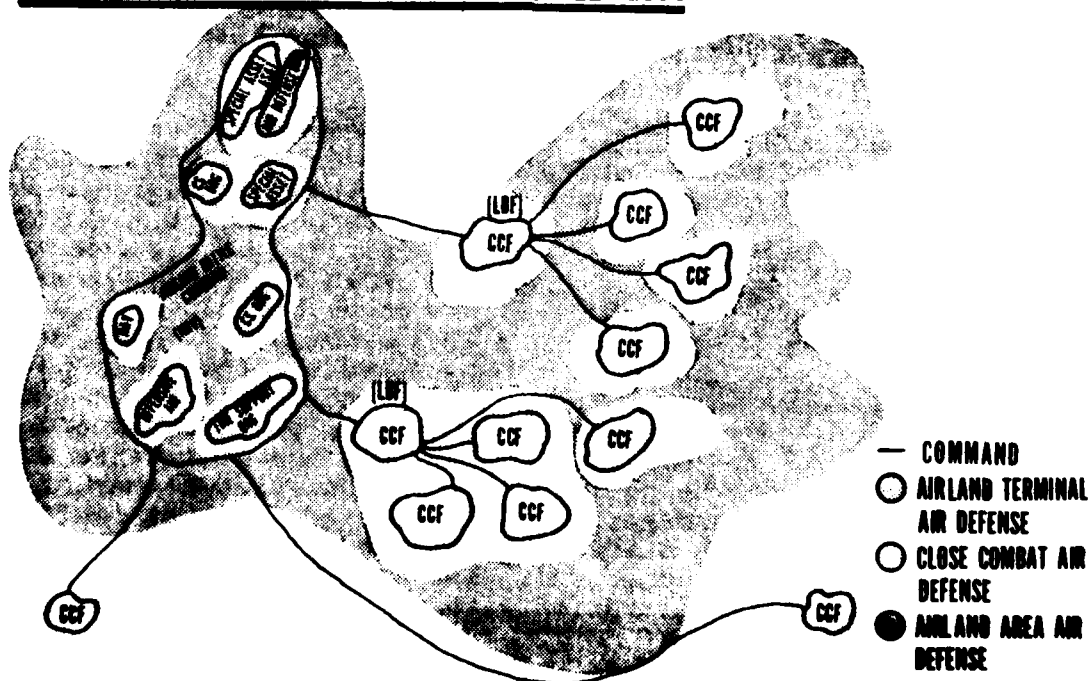
(e) Safeguards to preclude engagement of aircraft except in accordance with approved tactical directives.

(f) Coordination of air defense operations with friendly air offensive operations.

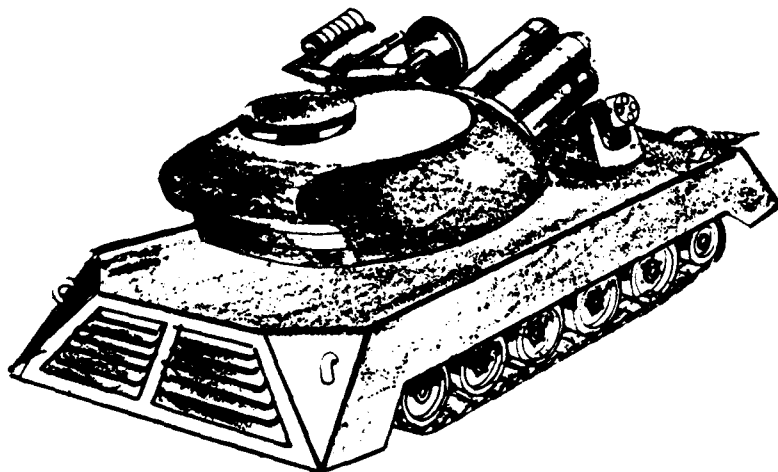
(g) A system that precludes sudden and catastrophic interruption of air defense coverage.

5. Operational Characteristics. All service air defense capabilities are employed to protect high value assets (i.e.,

AIR DEFENSE COVERAGE AIRLAND BATTLE 2000



static and mobile organizations, installations) and close combat forces within the theater of operations. Air defense and fire support functions are integrated to destroy and disrupt air threats and supporting facilities on the ground. When launched, enemy air vehicles are detected and countered by interdependent air defense weapon systems that are capable of continually engaging enemy air vehicles arriving or returning in any direction, speed or altitude. Weapon systems include but are not limited to missiles, guns with ballistic or maneuvering projectiles, directed energy weapons (lasers, high-energy microwave, or particle beam), obstacles (antiair mines or wire-barriers), nonnuclear EMP, jammers, and obscurants (smoke, gases and aerosols). Offensive operations are conducted to preempt enemy air and space operations before they threaten friendly forces. Enemy aircraft are attacked on the ground, at standoff ranges, and deep within enemy airspace. The value of threats and assets to be defended will change rapidly over time; therefore, air defense priorities will change rapidly. Long-range ground and air systems are used to quickly mass air defense efforts anywhere in the theater. Increased speed, accuracy, and lethality of air threats necessitate the employment of air defense systems with minimal reaction and engagement times. In addition to the gun and missile type of air defense systems, directed energy systems are employed as components of strategic, operational and tactical level air defenses.



AirLand Force Particle Beam Weapon

Enemy efforts to suppress US air defense systems can be conducted throughout the entire theater area of operations. Therefore, detection and warning systems, are netted to provide an integrated and continuous operational capability even when parts are selectively disrupted or destroyed. Target data is provided directly to all users simultaneously to avoid delays caused by layered C². While the primary means of defeating enemy air capabilities is through active means, the effectiveness of enemy reconnaissance systems and

attacking aircraft can be significantly reduced through passive means. The use of camouflage, visual and electronic deception, frequent displacement, dispersal, hardening, and reducing or modifying electromagnetic, thermal, and acoustic signatures all have applications in this area. Enemy electronic sensor systems

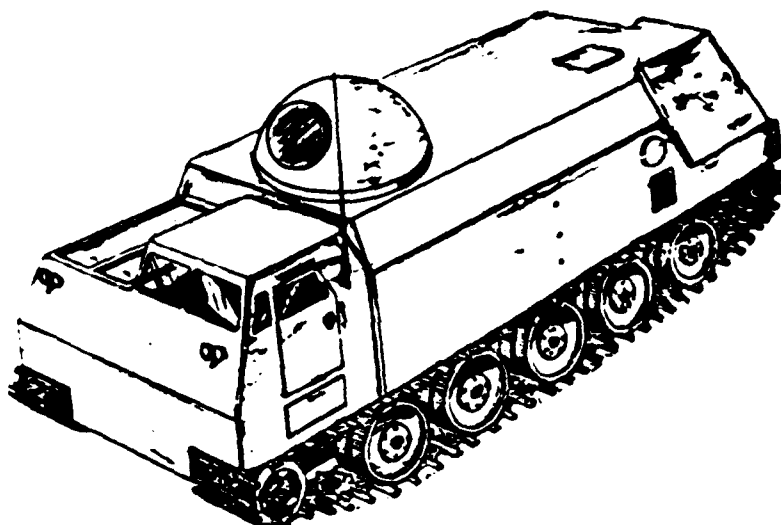
(ELINT collectors, anti-radiation missile sensors, radar warning receivers) and jammers are countered by minimizing and screening electromagnetic emissions. Air defense systems limit emissions to the minimum time required for engagements and rely on passive, quiet, or external airborne and ground active sensors for threat alerting and ordering. When operations permit, weapon systems are screened from the electronic threat by terrain or other shielding means to preclude detection, jamming and the effects of nuclear and directed energy weapons.

a. AirLand Force AD provides low-medium-high-altitude, and space defense for the ALF, and reinforces organic close combat force air defense when required to influence the battle. Air Force and Naval air defense contributions are integrated with Army capabilities at the ALF level to defend vital assets, fill gaps, and reinforce ground-based AD. AirLand force AD counters high-altitude aircraft and long-range airborne jammers before they become a threat to close combat forces. AirLand systems defend installations and ALF elements against the full spectrum of enemy air threats. ALF high-value assets such as airfields, command posts, logistics units, lines of communications, nuclear units, and subordinate elements are provided air defense by both fire and electronic means. Air defense counters enemy manned aircraft, remotely piloted vehicles (reconnaissance, decoy, and destructive), cruise missiles, surface-to-surface missiles, precision-guided munitions, and tactical and enemy national surveillance systems. Because airland force AD has the capability to destroy threat national assets, its C² interface with strategic air defense C² systems. Capabilities are required to preemptively counter enemy air operations before they become a threat to close combat forces. Likely enemy air routes become kill zones for airland interceptors and ground and sea based air defense. The operational level of air defense at the Air Force is predominately offensively oriented. Tri-Service fire support assets concentrate on attacking enemy air capabilities on the ground and specifically target airfields, aircraft on air fields, helicopter staging and

AIRLAND FORCE AIR DEFENSE OPERATIONS

- **OPERATES PREDOMINANTLY IN CENTRALIZED MODE**
 - **COMPLETELY INTEGRATED AND NETTED OPERATIONS**
 - **SHORT-RANGE TERMINAL DEFENSE AND AREA COVERAGES**
- **COMPLEMENTS CLOSE COMBAT FORCE AIR DEFENSE**
 - **FILLS GAPS & EXTENDS RANGE**
 - **AIR DEFENSE INTELLIGENCE AND EARLY WARNING**
 - **PROVIDES OFFENSIVE "AIR DEFENSES"**
 - **REINFORCES CLOSE COMBAT AS REQUIRED**

support areas, and enemy air defense command and control capabilities. There is a requirement to automatically resolve conflicts among friendly airspace users without reducing their effectiveness. Non-cooperative identification methods, multi-sensor correlation, and the intergration of all source intelligence data will significantly reduce the need for management using airspace control techniques.



AirLand Force AD Laser System

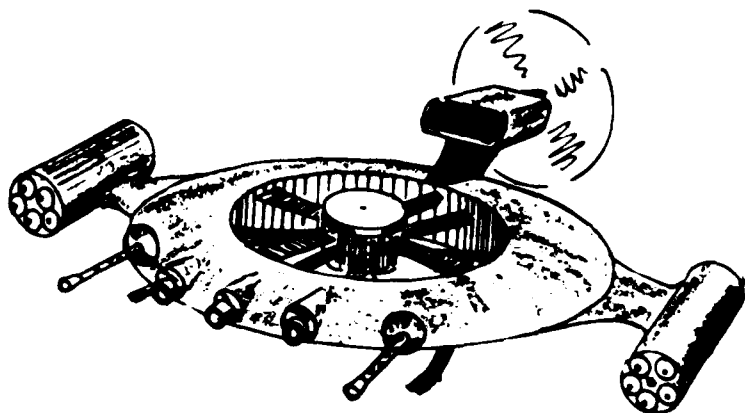
b. The primary function of close combat force AD is to provide continuous shield for close combat forces. Secondly, it is available to counter transisting air threats to reduce the burden on airland force AD. The air defense shield is immediately capable of changing horizontal or vertical dimensions in response to changes in command and control considerations, enemy attack parameters, or mission requirements. Highly mobile medium-and

CLOSE COMBAT AIR DEFENSE

- **MOBILE AND AGILE**
- **SURVIVABLE**
- **INDEPENDENT OPERATIONS**
- **NETTED 360° PROTECTION**
- **DYNAMIC SHIELD**

short-range systems counter threats including attack and reconnaissance aircraft, helicopters, remotely piloted vehicles, cruise missiles, and precision-guided munitions. Manportable air defense weapons and antiair mines thicken low-altitude defenses. Anti-air mines are also used to deny landing zones and nap-of-the-earth routes used by enemy air assault forces. Close combat air defense includes the contributions of close combat and fire support weapons used in an air defense role as well as

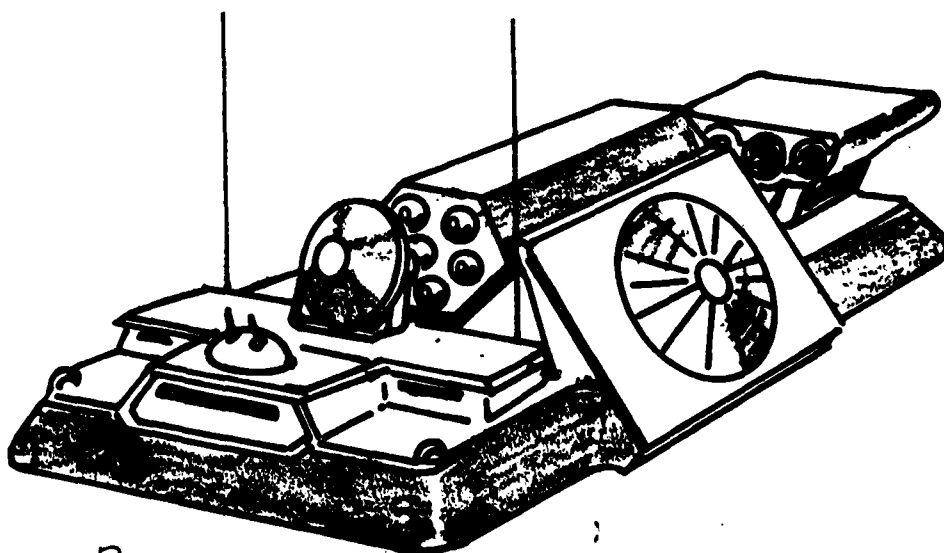
air defense capabilities. Air defense dedicated platforms provide command and control of air defense fires and counter high density attacks. Platforms may include air platforms which possess great agility and air defense fire power.



Close Combat Force AD
Remotely Piloted Vehicle

systems counter low-altitude surprise attacks. Air defense air vehicles may also contribute to operational flexibility by providing highly mobile weapons that can quickly mass air defense capabilities in response to rapidly changing close combat force AD requirements, such as in air assaults. Close combat air defense has the mobility and survivability commensurate with the close combat force. Air defense elements are task organized to defend command posts, fire support delivery systems, support areas, lines of communications, intelligence facilities, and other assets from low-and medium-altitude attacks and surveillance. Surveillance, target acquisition, threat ordering, early warning, and combat² intelligence are provided close combat force AD via a netted C² system. This system allows fire units to minimize emissions from organic sensors, while taking advantage of the entire sensor capability of the close combat force. Close combat forces are provided information continuously from AirLand national level sensors.

While interceptors are selectively employed in conjunction with ground-based defense during saturation attacks, greater effectiveness is derived from the employment of interceptors at extended ranges outside the protective envelope and range capabilities provided by land based AD. Interceptors also attack threats which bypass or survive close combat force air defenses. Ground-based short-range air defense and Army low-altitude air vehicles equipped with short-range air defense



Close Combat Force
AD Hovercraft

POSSIBLE TECHNOLOGIES TO BE INVESTIGATED FOR AIRLAND BATTLE 2000

6. FOCUS FOR TECHNOLOGICAL DEVELOPMENT.

Developmental needs are stated in terms of simplicity, supportability, survivability, lethality, and effectiveness.

- | | |
|--|--|
| <ul style="list-style-type: none"> ● GUN <ul style="list-style-type: none"> ● RAIL GUN (HYPERVELOCITY) ● SMART OR MANEUVERING PROJECTILES ● DIRECTED ENERGY <ul style="list-style-type: none"> ● LASER ● PARTICLE BEAM ● MICROWAVE ● NONNUCLEAR EMP ● COUNTERMEASURES <ul style="list-style-type: none"> ● JAMMERS ● OSCURANTS ● AEROSOLS | <ul style="list-style-type: none"> ● MISSILES <ul style="list-style-type: none"> ● SHOOT-ON-THE-MOVE ● FIRE AND FORGET ● SELF-INITIATING ● ANTI-AIR MINES AND BARRIERS ● SIGNATURE EXPLOITATION <ul style="list-style-type: none"> ● IR ● ACOUSTICS ● UV ● RF ● VISIBLE |
|--|--|

a. Simplicity. Air defense systems of the future are designed to simple logical criteria without sacrificing the quality, quantity, or effectiveness needed to fight the battle in the year 2000 and beyond. Thus, the systems are designed to be simple, durable, and reliable. However the systems are still capable of accomplishing complex tasks. The systems avoid the great expense of military manpower, so few operators are required. Operators are also maintainers who are not required to be super qualified technically. Robotics are used to a great extent to avoid manpower needs. Systems have a modular design which allows product improvements without major system redesign. In so far as possible, commonality with other Army and all service systems is maintained.

SIMPLICITY

- SIMPLE, DURABLE SYSTEMS
- NOT MANPOWER INTENSIVE
- MODULAR DESIGN
- COMMONALITY WITH ALL SERVICE SYSTEMS

b. Supportability. Close combat weapon systems are sufficiently "self-contained" to permit deep battlefield penetration without refueling, reloading of ammunition, resupply of repair parts, or replenishment of rations or other expendables. This capability requires designed-in endurability for crew support. The total system can operate over extended periods of time in an intense battlefield environment. When reload, refit, or resupply operations are required, they can be performed rapidly in battlefield environments without exceptionally qualified technical personnel. When feasible, robotics and modularized resupply and maintenance packs are used which can be inserted on the battle field during the battle. In addition to mobility commensurate with supported forces, air defense systems are transportable by standard military airlift.

(1) The air defense systems are designed to be durable. Critical functions such as acquisition, identification and engagement control have alternate modes of operation to insure continued operation if any one mode fails or is neutralized. If system failures occur, graceful degradation of the system results instead of catastrophic loss of operation. The systems are capable of a degree of self-maintenance and self-decontamination. Built-in diagnostic and training equipment are available for use during periods of light activity.

(2) AirLand Force air defense has less demanding supportability requirements than close combat air defense. However, it is desirable that common systems with close combat forces are used for the terminal defense airland systems. Longer range and special capability airland ground-based air defenses must have the supportability commensurate with the mobility and employment options required of ALFs.

SUPPORTABILITY

- MODULARIZED MAINTENANCE
- MODULARIZED RESUPPLY
- SELF-SUFFICIENT
- DURABLE
- AIRLIFT TRANSPORTABILITY

c. Survivability. A great degree of survivability is inherent in the ability of the systems to move rapidly. Accurate onboard passive navigation capabilities keep close combat air defense systems closely integrated with close combat operations. The systems are referenced to a common grid central to the command and control of the entire airland force. The systems are hardened sufficiently to withstand the rigors of combat. Armor protection is effective but weight and volume are designed with worldwide employment options in mind. In addition to armor protection, air defense systems are able to withstand and be operated in electromagnetic pulse, chemical, and biological warfare environments for extended periods. Both individual and collective protection are developmental considerations.

(1) The air defense systems remain indistinguishable from other elements on the battlefield. This is accomplished by using multimode, quiet, passive sensors and the capability to engage threats completely by remote cueing. Environmental disturbances

such as electronic, acoustic, visible light and thermal emissions are suppressed across the entire spectrum to avoid enemy detection. Survivability may also be enhanced through the capability of projecting false signatures in order to deceive enemy sensors as to the friendly air defense disposition.

(2) Units providing the close combat force air defense require mobility commensurate with high-speed close combat forces. Inherent in this mission is the ability to withstand the climatic extremes representative of potential scenarios, and the ability to traverse greatly varying terrain to include wet and dry gaps, rubble urbanized areas and forest, desert, jungle, and mountainous terrain.

(3) Airland ground-based air defense systems do not require the same degree of hardness as close combat AD. However, commonality with close combat forces is still a goal. Electromagnetic pulse, biological and chemical protection requirements for ALFs are the same as close combat forces. Special capability air defense units and ground-based, long-range air defense may not have the mobility of other airland level air defenses, thus the ability to project false signatures and remain undetected are much more important for their survivability.

SURVIVABILITY

- **MOBILE**
- **HARDENED**
- **NOT DEFEATED BY SINGLE COUNTERMEASURE**
- **NOT DETECTABLE**

d. Lethality. Air defense systems require weapons of sufficient lethality to provide a high degree of protection for vital assets and mobile forces. Air defense weapon systems require the capability of reducing enemy aircraft effectiveness to levels that allow effective operations by friendly forces. Air defense weapons engage threat weapon platforms at ranges in excess of effective threat ordnance delivery ranges and are capable of

engaging the actual ordnance if launch occurs prior to weapon platform kill. Air defense is effective in an intense electro defense weapon engage conventional air threats, cruise missiles, satellites, tactical ballistic missiles (TBMs), small cross-section precision-guided munitions (PGMs), helicopters, and remotely piloted vehicles (RPVs) operating in decoy, attack and reconnaissance roles. To accomplish this, the air defense acquisition function cannot be limited by terrain or horizon considerations.

(2) Multifunction systems are desirable. For example, a directed energy weapon designed primarily to engage satellites also has the capability to engage other elements of the threat spectrum. In this context, the threat spectrum includes close combat and fire support targets in addition to the full range of air defense targets. Although multifunction systems are desirable, effectiveness in the performance of the primary mission is the most critical consideration.

(3) Time line functions such as acquisition, identification, tracking and engagement dwell times are streamlined to assure rapid system reaction. Due to the volume of potential threats, high rates of fire are required with large magazines of stored kills. However, because of resupply constraints numerous "shots" per engagement cannot be allowed. Thus each single "shot" must be extremely lethal. Here again, the constraints on airland level forces are not as severe. Systems using missiles to effect target kills are not constrained in multiple engagement capabilities by requirements to control missiles during flyout. Close combat AD systems require shoot-on-the-move, all weather day/night and fire and forget capabilities.

(4) Weapon systems performance cannot accept degradation through the employment of threat countermeasures; therefore, systems must incorporate multiple modes of operations (radio frequency, infrared, acoustic, optical, laser) to maintain tactical viability.

LETHALITY

● HIGH RATE OF ENGAGEMENTS

LARGE MAGAZINE OF STORED KILLS
TIME LINE FUNCTIONS (ACQUISITION, ID, TRACKING, DWELL) STREAMLINED
FIRE AND FORGET
LETHAL SINGLE MUNITION

● ABILITY TO ENGAGE WEAPON PLATFORM, OR ORDNANCE BEYOND ITS EFFECTIVE RANGE

● SHOOT-ON-THE-MOVE

● AGAINST FULL SPECTRUM OF THREATS

● AIRCRAFT	● TBMs	● CRUISE MISSILES
● HELICOPTERS/AIR CUSHION	● PGM/RPV	● SATELLITES

● MULTIFUNCTION SYSTEMS CAPABLE OF ENGAGING GROUND VEHICLES

e. Effectiveness. Since close coordination between combat forces is the essence of the AirLand Battle 2000 Concept, these forces are provided a realtime picture of the battlefield. This picture must include threat and friendly disposition in terms of location, force characteristics, enemy axis of advance, and other key tactical considerations. Inherent in this task is the collection and dissemination of all source realtime surveillance data via jam resistant communication links. However, weapon systems are optimized for autonomous operations (without communications to higher levels of command and control) to avoid degradation in capability in the event of communications loss. This requires each system to have its own near perfect identification and target classification capability. A system optimized for autonomous operations performs well with no external communications and is greatly enhanced when communications are present. Optimization for autonomous operations does not negate the need for accurate external information. However, as identification and discrimination capabilities approach the near perfect, using active and passive means, the need for centralized control is greatly diminished.

(1) Air defense systems require identification and discrimination features which provide rapid and highly reliable identification. Noncooperative systems that use inherent air vehicle signatures for identification are essential to complement active IFF. Additionally, a system which rapidly discriminates between all types of air vehicles (i.e., RPV, PGM, TBM, cruise missile) is essential.

(2) As threat forces increase in sophistication, the opportunity to exploit emissions increases. Air defense forces are capable of utilizing these emissions for purposes of identification, classification, and alerting.

EFFECTIVENESS

- FIRE CONTROL
 - COMMAND, CONTROL, AND COMMUNICATION
 - IDENTIFICATION: USE INHERENT AIRCRAFT SIGNATURES
 - CLASSIFICATION: (PGM, TBM, RPV, AIRCRAFT)
- OPTIMIZE FOR AUTONOMOUS OPERATIONS
 - IF COMMUNICATIONS EXIST: ENHANCED PERFORMANCE
 - IF COMMUNICATIONS DO NOT EXIST: GOOD PERFORMANCE
- ACQUISITION
 - NETTING OF SENSORS
 - ACQUISITION RANGE NOT LIMITED
- EXPLOIT THREAT EMISSIONS

• TERRAIN AVOIDANCE	• JAMMING	• COMMUNICATION
• NAVIGATION	• IFF	• WEAPON SENSORS/OMBANCE

7. Conceptual Differences.

In order to better understand the air defense functional Appendix to the AirLand Battle 2000 Concept, the following conceptual differences are pointed out between current air defense and AirLand Battle 2000 air defense.

NOW

a. Multilevel air defense responsive to layered and complicated chain of command.

b. Orientation on area/belt defense with altitude layering, SHORAD/LOMAD/HIMAD.

c. Separate service efforts to do air defense, tenuously guided with Air Force lead.

d. Centralize control attempted with autonomous operation the likely fallback mode.

e. Rigid and vulnerable command and control structure.

f. Fire units highly dependent upon own sensors for intelligence, early warning acquisition with minor contributions available from higher echelons.

ALB 2000

Bilevel air defense which is not layered. It is responsible only to the ALF Cdr and CCF Cdr.

Orientation on threat and assets to be defended, not on areas or altitudes.

Triservice AD assets integrated under single commander to practice operational level of war in air defense, both offensive and defensive.

Decentralized air defense normal mode of operation with centralized control of offensive AD capabilities.

Netted sensors, information and C², with highly fluid changeable operations possible.

All units contribute to and draw from the intelligence data base, including strategic sensors with information netted and shotgunned to participants.

NOW

g. Air Defense systems limited by munition constraints, both logistical and in delivery to the target, creates susceptibility to large volume air attacks.

h. Air defense systems dependent primarily on active radar for the primary means of acquisition.

i. Command and control highly dependent on boundaries, corridors, and rules for control of weapon systems fires.

j. Manpower, intensive, logistically burdensome movements and operations.

ALB 2000

Highly agile defense systems with logistically inexpensive, highly lethal munitions (Directed Energy, Maneuvering Projectiles).

Multimode sensing, with quiet/passive technologies and remote cueing the normal mode.

All systems referenced to a command grid and netted so command and control can be fluid, changeable, and responsive to situations.

Agile, nonmanpower, intensive systems capable of independent sustained operations.

APPENDIX E
INTELLIGENCE AND ELECTRONIC WARFARE (IEW)

PURPOSE. To describe the concept of tactical intelligence and electronic warfare (IEW) in support of the AirLand Battle 2000.

OPERATIONAL CONCEPT

1. General. In the AirLand Battle 2000, as today, the commander needs information about the enemy - his strengths, weaknesses, locations, directions of attack, or areas selected for defense, and his ability to conduct combat operations. He needs this information in order to assess the enemy's capabilities and determine a scheme of maneuver. He also requires support to defeat the enemy's command, control, communications and intelligence systems. Thus, the tactical IEW system will support the commander by accomplishing the four following tasks:

a. Situation development.

Situation development is the process which enables the commander to see and understand the battlefield. It includes an assessment of weather and terrain impact and projects enemy intentions based on the evaluation of information from all sources. Situation development is the foundation for efficient intelligence asset management. It is the prime requirement for effective target development.

IEW TASKS:

- SITUATION DEVELOPMENT
- TARGET DEVELOPMENT
- OPSEC SUPPORT
- ELECTRONIC WARFARE

b. Target development. Target development is the detection, identification, and location of enemy units and activities in sufficient time and detail to support effective attack. Target development supports the attack of the enemy throughout each echelon's area of influence.

c. OPSEC support. OPSEC support provides the commander with the ability to see himself through the eyes of the enemy commander. OPSEC support elements identify friendly vulnerabilities as seen by the enemy, assess enemy capabilities to exploit these vulnerabilities, recommend countermeasures, and provide support for deception and counterintelligence operations. The primary tactical IEW tools of OPSEC support are IPB, counterintelligence, and electronic deception.

d. Electronic warfare. The IEW system provides the commander with the ability to detect, locate, exploit, deceive or disrupt hostile use of the electromagnetic spectrum while supporting continued friendly use of the spectrum. In AirLand Battle 2000 a new aspect is added to EW, the ability to destroy the enemy through the use of electromagnetic energy. Destructive EW systems will fall within the framework of several battlefield functional

areas. EW is redefined to accommodate these new capabilities and consists of electronic combat (which the IEW system will support), defensive electronic warfare, and electronic deception.

2. Tactical Intelligence and Electronic Warfare System Characteristics.

a. The IEW system is designed for war and modified for peace and crisis situations. The system is not designed solely for the European war but supports AirLand Battle 2000 operations worldwide.

b. The tactical IEW system is highly automated. The large number of targets anticipated on the AirLand Battle 2000 battlefield demand automated data processing to manage information, focus collection systems, and provide dynamic situation displays to support the commander's decisionmaking. The system is integrated into the command and control system to facilitate the input, distribution and update of information and to preclude the development of specialized ADP systems.

SYSTEM CHARACTERISTICS

- DESIGNED FOR WAR...
MODIFIED FOR PEACE
- AUTOMATED
- ENEMY INDEPENDENT
- SEES BATTLEFIELD IN DEPTH
- COMMON METHODOLOGY
- COMPATIBLE WITH TACTICAL FORCES

c. The tactical IEW system is enemy independent. It is able to satisfy the commander's information needs regardless of enemy efforts to deny us that information. Successful collection of information is not dependent on the enemy making mistakes.

d. The tactical IEW system is capable of seeing the battlefield in depth. This is accomplished through the all source intelligence product derived from ground-based, airborne, and spaceborne sensors. Combined, these assets cover both the area of influence and the area of interest at each AirLand Battle 2000 echelon.

e. The tactical IEW system has a common methodology for IEW operations at all echelons of command.

f. All tactical IEW elements have survivability and mobility capabilities commensurate with the forces they support.

3. Intelligence and Electronic Warfare Capabilities.

a. Each AirLand Battle 2000 echelon has as part of its IEW system an analytical capability which provides all source intelligence about the enemy forces which can influence the commander's operations. The IEW system informs the commander on all aspects of the enemy, i.e., where he is going, what damage he has sustained, where he expects friendly forces to be, where he is

taking risks, and which elements of his command are key to the success of his immediate plans. These aspects paint a picture for the commander which depict the enemy's weaknesses against which the commander can maneuver and win, even though outnumbered.

The IEW system integrates information from all sources and provides intelligence products to users in sufficient time and detail for effective command action whether attack, maneuver, or deception. The analytical tasks of the IEW system are shown at the right.

INTELLIGENCE ANALYSIS SYSTEM

- RECEIVE, PROCESS, AND DISSEMINATE INTELLIGENCE
- SITUATION DEVELOPMENT
- TARGET DEVELOPMENT
- INDICATIONS AND WARNING
- PROJECT ENEMY ACTIONS/ REACTIONS
- RECOMMEND HIGHER ECHELON SUPPORT

b. One of the key building blocks of the IEW system is the process called Intelligence Preparation of the Battlefield (IPB). IPB begins before the battle, continues throughout it and supports all IEW functions. In the initial steps of IPB, usually prior to hostilities, data bases are constructed which address the enemy to be fought, the ground to be fought over and the anticipated weather and its effects on the battlefield. Next, the commander's missions are examined against the IPB information. Friendly and enemy options are developed and opposing actions or reactions projected. Once the scheme of maneuver is decided on, IPB identifies how the battlefield can hide what must be hidden, can expose what should be seen, and projects the advantages and disadvantages the terrain will have on the maneuver of both friendly and enemy forces. Finally, during the battle, comparisons between the current situation and projected events confirm the enemy's course of action. The IPB process supporting AirLand Battle 2000 accomplishes IPB in support of offensive and defensive operations at both the tactical and operational levels.

IPB

- AUTOMATED HIGH SPEED INTERNAL IEW PROCESS
- DATA BASES CAN BE APPLIED TO BOTH OPERATIONAL AND INTEL NEEDS
- INCREASES TIMELINESS AND ACCURACY
- MINIMAL UNPRODUCTIVE ACTIONS

c. OPSEC support elements at each AirLand Battle 2000 echelon maintain a data base on friendly unit patterns, profiles, and high value targets. These sections function to counter the enemy's intelligence collection effort. OPSEC support elements identify where the enemy intelligence collection systems are on the

OPSEC SUPPORT

- ASSESS FRIENDLY VULNERABILITIES
- RECOMMEND COUNTERMEASURES
- PRIMARY IEW TOOLS
 - O COUNTERINTELLIGENCE
 - O ELECTRONIC DECEPTION

battlefield, what collection capabilities they have, and how well they can exploit friendly vulnerabilities. In order to neutralize the enemy's intelligence collection effort, OPSEC support elements orchestrate counter-HUMINT, counter-IMINT, and counter-SIGINT activities in support of the commander's overall OPSEC plan.

d. The IEW system supports Electronic Combat by providing both intelligence concerning the enemy's activities, locations, and intentions plus the ability to selectively degrade and disrupt the enemy's C2 systems to aid mission accomplishment. This is accomplished through an array of electromagnetic sensors and includes the use of specific mission jammers which electronically interrupt or delay critical enemy activities (i.e., release of nuclear weapons) in order for the commander to gain or retain the offensive edge.

- ELECTRONIC WARFARE**
- INTELLIGENCE SUPPORT TO ELECTRONIC COMBAT
- DEFENSIVE EW
- ELECTRONIC DECEPTION

e. The IEW system performs defensive electronic warfare to minimize the effects of the enemy's IEW efforts. This is accomplished by the location of enemy jammers for destruction, the use of electronic barriers to screen friendly communications to defeat enemy interception and exploitation, and the use of ECCM techniques to assure the viability of friendly communications. Defensive EW actions also attempt to neutralize the enemy's offensive electromagnetic systems.

f. The IEW system performs electronic deception in support of the commander's overall deception plan. This includes the use of electronic signature simulators and holographic displays which depict fictional equipment, units, and activities on the battlefield.

4. Close Combat Force (CCF) IEW Capabilities. The CCF commander's information needs are concerned with the enemy units and activities within his area of influence and area of interest. The IEW analysis system organic to the CCF is the only part of the CCF identified as an "intelligence" system. The fast moving and wide ranging nature of AirLand Battle 2000 combat limits the size of ground based IEW support. The CCF is not capable of staying static long enough to deploy, monitor, and manage a large complex intelligence collection array. To support the commander's IEW needs at this echelon, the IEW system consists of critical elements only, that is, an IEW analysis system with input from national and multi-service sources, and those IEW assets necessary to gain that last minute locational

- CCF HAS -**
- TACTICALLY ORIENTED INFO NEEDS
- NO SPECIALIZED IEW ORGANIZATIONS
- ORGANIC ANALYSIS SYSTEM
- IEW ASSETS INPUT DIRECTLY TO COMBAT ELEMENTS

accuracy or situation confirmation which is required for success on the battlefield. To further enhance IEW support to the commander at this echelon, the IEW assets input directly to the units or weapon systems which need their capabilities. Consequently, IEW assets are woven into the fabric of the CCF and lose their traditional IEW identity.

5. Land Battle Force (LBF) IEW Capabilities. Specific IEW assets for the LBF will be allocated from the parent ALF as required.

6. AirLand Battle Force (ALF) IEW Capabilities. The ALF commander's information needs are concerned with the major enemy units and activities within his area of influence and area of interest. The IEW system organic to the ALF receives, processes, and disseminates intelligence throughout the ALF, subordinate LBF and CCF, and to the next higher echelon. While the CCF has no separate IEW organization, the ALF has all IEW assets consolidated into one organization. These assets are used during peace, crisis, and war.

ALF HAS--

- OPERATIONALLY ORIENTED INFO NEEDS
- SPECIALIZED IEW ORGANIZATIONS

7. Special Considerations for IEW.

a. AirLand Battle 2000 requires command decisions to be made rapidly without waiting for exhaustive intelligence estimates to be made. To accomplish this, the intelligence product from ground based, airborne, and spaceborne sensors is available to all AirLand Battle 2000 commanders on a realtime basis.

STRATEGIC LEVEL

- NATIONAL AND INTERNATIONAL SYSTEMS
- ORIENTS ON MAJOR ENEMY STRENGTHS AND VULNERABILITIES
- MASKS NATIONAL INTENTIONS (DECEPTION)

OPERATIONAL LEVEL

- COMBINED AND JOINT SYSTEMS
- ORIENTS ON ENEMY INTENTIONS AND COURSES OF ACTION IN THE THEATER
- PROVIDES MANEUVER WITH ELEMENT OF SURPRISE (FEINTS, DEMONSTRATIONS, ETC.)

b. Orienting on specific geographical areas with unusual language, climatic and terrain situations requires area specialists within the IEW system.

TACTICAL LEVEL

- FINDS THE ENEMY AND DEVELOPS TARGETS
- ENHANCES SURVIVAL BY DECEPTION MULTIPLE SIGNATURES, CAMOUFLAGE, JAMMING, INTERCEPTION, ETC.

c. The IEW system provides support to a much expanded electronic warfare capability. The use of new electromagnetic weapons by the enemy requires that the IEW system be capable of defending the commander's use of the

electromagnetic spectrum.

8. Focus for Development.

a. Strategic. All echelons of the AirLand Battle 2000 force must have rapid access to intelligence capabilities found at the national and multi-service command levels. Pertinent intelligence produced by allied nations and their military forces must also be made available. The IEW support available to AirLand Battle 2000 forces in war must be in place and operating in peace.

b. Operational. Operational level IEW activities provide that broad perspective which aids the commander in detecting or creating operational opportunities on the battlefield. Specific analytical techniques and sensor results are required to accomplish this task.

FUTURE NEEDS INCLUDE-

- ACCESS TO NATIONAL AND MULTI-SERVICE CAPABILITIES
- INTEL SUPPORT IN PLACE AND OPERATING IN PEACETIME
- SYSTEMS WITH NO UNIQUE PHYSICAL OR ELECTRONIC SIGNATURES

c. Tactical. The IEW assets used throughout the CCF must have no unique physical or electronic signatures to distinguish them from their non-IEW neighbors. Unique IEW skills required at this echelon must be reduced to the lowest level possible through the use of robotics and artificial intelligence systems.

d. Human Dimensions. IEW activities must require less technical and training intensive skills from human operators.

e. Focus on Technology. Anticipated technology developments to support IEW operations will occur in the following areas:

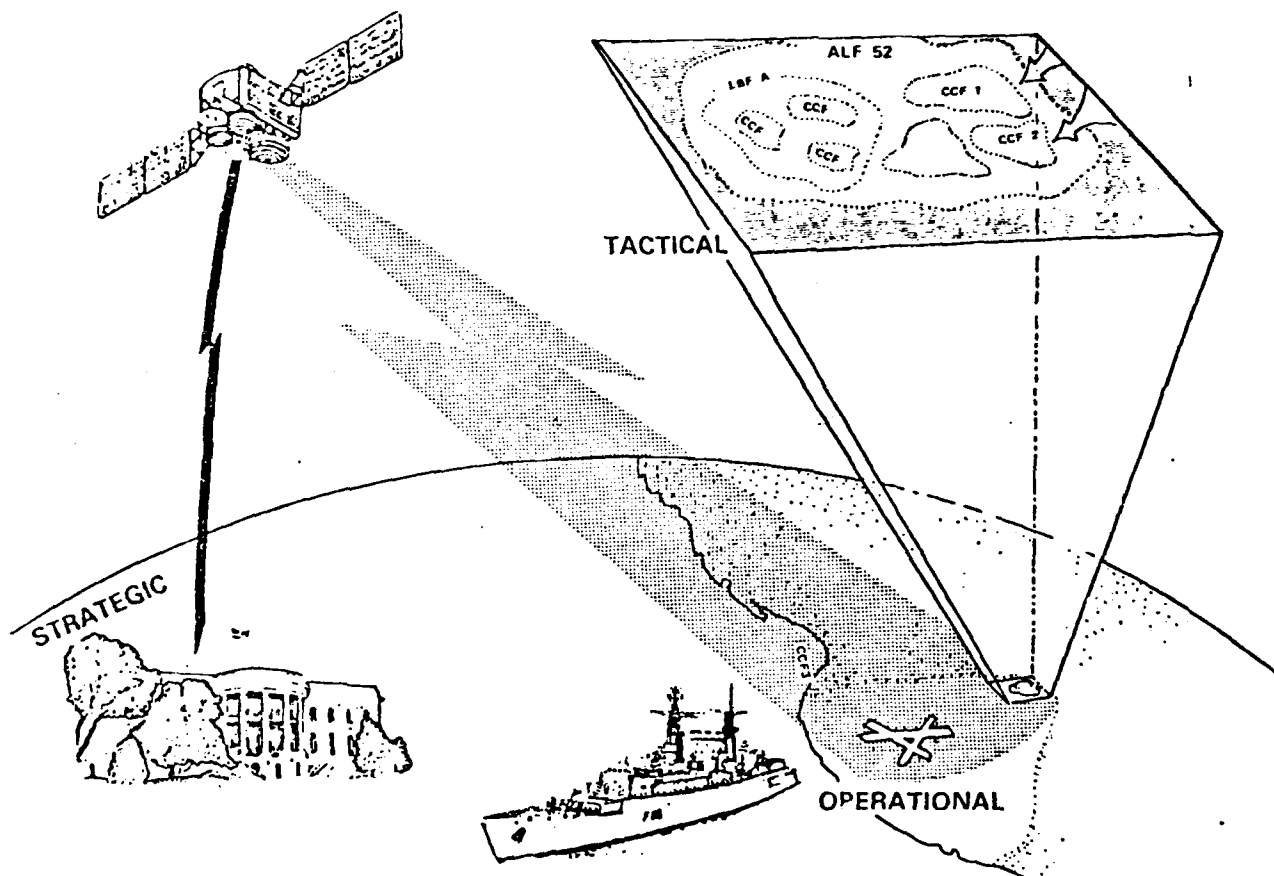
- Distributed intelligence data base.
- Reliable, redundant communications system.
- Less vulnerable sensor systems.
- Automated threat projections.
- Continual, real time access to national systems.
- Electromagnetic obscuration materiel.
- Specific-mission jammers.
- Electromagnetic barriers.
- Electromagnetic signature simulators.
- Electromagnetic intrusion devices.
- Voice recognition devices.
- Automatic language translators.
- Digital terrain data systems.
- Robotics and artificial intelligence.

AIRLAND BATTLE 2000
APPENDIX F
COMMUNICATIONS FUNCTIONAL CONCEPT

PURPOSE. This concept describes the communications operations in support of AirLand Battle 2000.

OPERATIONAL CONCEPT.

1. Communications provide for the execution of all three levels of war, (strategic, operational, and tactical) and insures their connectivity and intra-operability from national command authority to the theater commander, if designated, on down to the battle area.



Communications in Support of Levels of War

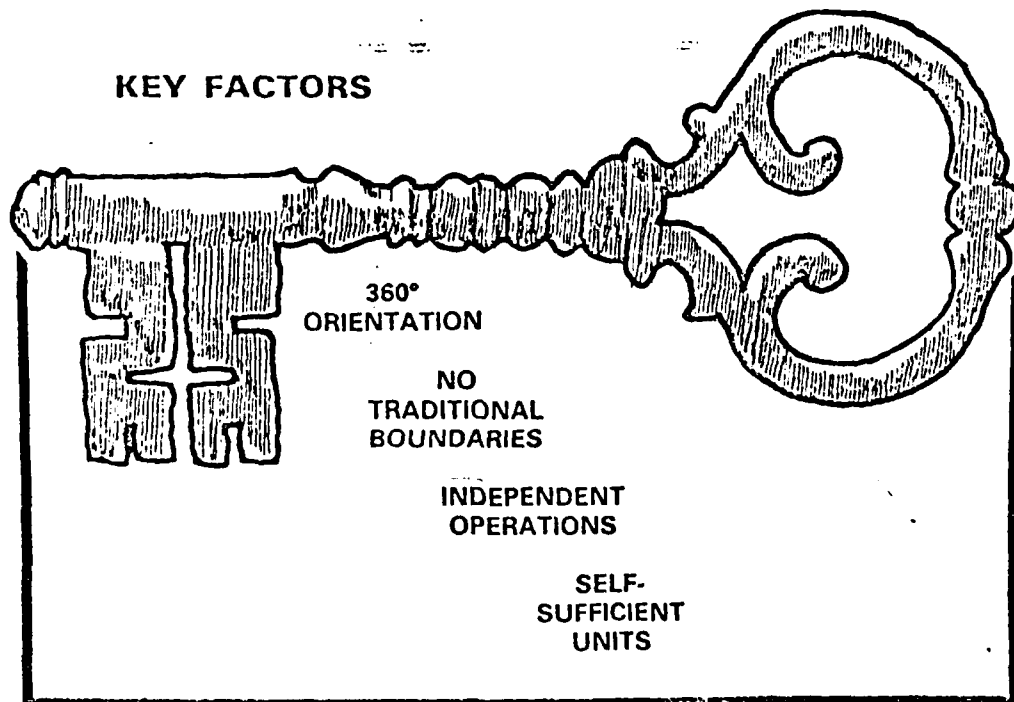
2. Communications is concerned with multiservice and combined intra-operability, particularly in areas of fire support, air defense and intelligence. It must also provide the means to move logistics data traffic rapidly from the battlefield through the

multiservice trunking system into the worldwide defense communications systems for delivery to the national inventory control points in the continental United States. Because these requirements cover a broad range of equipment for organizational responsibility, concentration will be at the tactical level.

3. The fundamental tasks of communications remain the same. These tasks are:

- o Security
- o Switching
- o Procedures
- o Transmission
- o Termination
- o Communications Management

4. Key factors result in special communications considerations.



5. Special communications considerations:

a. Information transfer. Data systems handle large volumes of information. The emphasis is not on transfer of large volumes of data, but on the real-time or near real-time transmission of selected data elements filtered at the source by operational facilities before entering the communications system and at each echelon of use.

b. Frequency of movement.

Frequent movement of the AirLand 2000 force requires less dependence on wire and cable. Cable and wire are eliminated to a large degree. The introduction of fiber optics and other system improvements are used where a need for wire and cable remains. Fiber optics provide protection against EMP in intra-assembly cabling and some cable and wire systems.

Secure voice, facsimile, real-time graphics and video are used on the battlefield to rapidly transmit mission type orders and overlays. Multimedia input and output devices provide display of digital data in required formats. This rapid transmission of orders via secure data means allows the commander to take advantage of opportunities to attack the enemy when and where he is vulnerable and to initiate intended action before the enemy can decisively engage friendly forces.

c. Long distance communications include:

Secure high frequency (HF) radios, both single and multi-channel, with an anti-jam capability. Greater reliability of HF radio is achieved through better use of the frequency spectrum and adaptive HF radio techniques which automatically vary power and channel selection.

An automated battlefield frequency spectrum management system.

Small, lightweight, and reliable retransmission equipment for tactical radios for installation in ground or airborne environments. Remotely controlled vehicles, balloon or tethered type suspended relays provide retransmission capabilities for limited and extended periods of time.

Unattended ground communications systems provide a retransmission capability.

d. Communications procedures.

Communications procedures which impede immediate response such as the communications electronics operating instructions

(CEOI) should be eliminated entirely. If the CEOI cannot be eliminated, the controlling objective is an automated CEOI system which eliminates the bulk and awkwardness of CEOI production, dissemination, and use. Communications procedures, radio nets, and use of frequencies are standardized and do not display unique signatures which would "telegraph" our tactical intentions. Examples of unique signatures include the use of special frequencies or nets, special communications equipment or use of special protocols, formats, or modulation.

The simultaneous and near autonomous engagement of enemy forces at several echelons places significant emphasis on increased mobility, and the requirement to pass selected intelligence and C² information in near real-time to subordinate C² elements. Use of secure burst type communications and electronically produced, video-displayed, rapidly transmitted mission directives, situation overlays, or changes to orders, facilitate the commander's ability to turn inside the enemy's decision loop.

Communication hardware is reduced in size, complexity and operated by functional users. Modular expansion of standard equipment provides high capacity requirements. Antenna masts are affixed to combat vehicles and are automatically erected.

Friendly force position and identification information are transmitted automatically to command and control data bases.

e. Training and doctrine.

Large numbers of MOS and additional skill identifiers are reduced through standardization and simplification of equipment design. This implies the need for C-E equipment and systems which are simple to operate, and require minimal logistics support.

Soldiers are trained to operate in a nuclear environment. They have an understanding of operational techniques which minimize the effects of EMP. This training includes procedures to recognize and recover from the effects of operational disruptions; e.g., the loss of memory in computer controlled communications systems.

ECCM procedures to counter the EW threat are further refined and fully integrated into day-to-day training within the signal community. Training support packages on ECCM are provided to other military schools.

This concept specifies deployment of communications assets that are user oriented and on an area basis. In providing an area system, the signal commander moves his communications assets only as necessary to provide continuous communications. This provides

communications support throughout the battlefield and frees the maneuver commander to move at will and still have mobile access to a discrete address switching system. As a result, the commander perceives his communications system to be virtually nodeless and as such, it is "transparent" to the user.

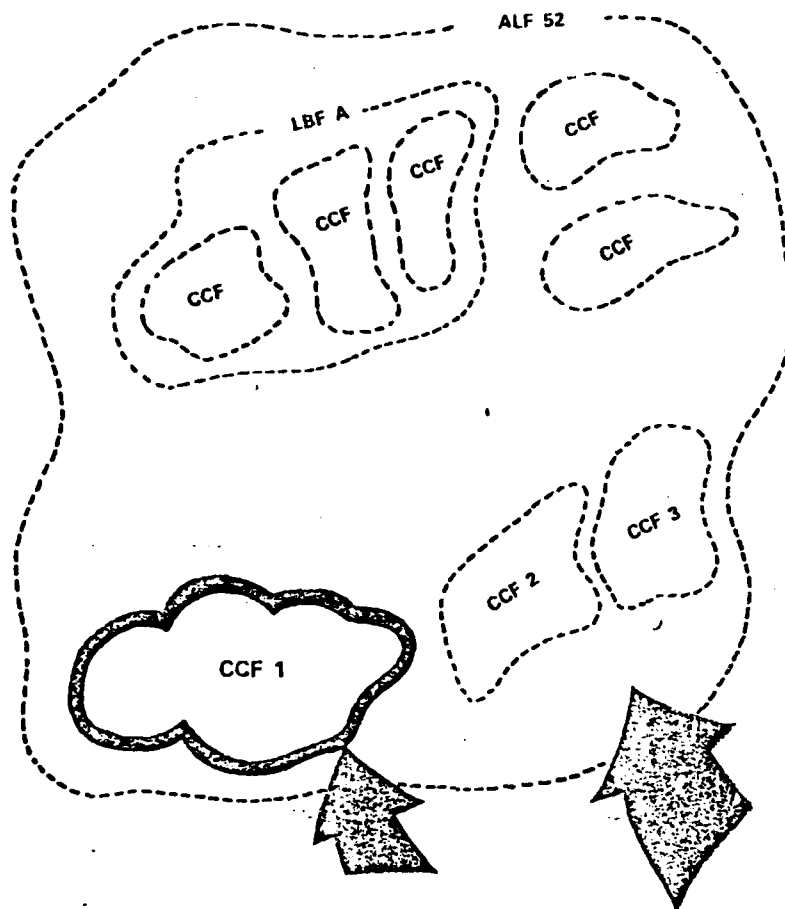
f. Command Post (CP) vulnerability is reduced through the use of devices such as short range, wide band, low probability of intercept radios, and fiber optics which allow the CP to be separated from the signature of communications and allows dispersed operations through the use of closed circuit television.

6. Physical and technical standardization assures deployability and system flexibility.

a. Physical. Standard power and environmental control units assure flexibility of operations and the tailoring of communications systems to satisfy specific needs. Standardized air transportable packaging to permit "roll-on, roll-off" operations of communications equipment enables more efficient deployment. The design of communications equipment facilitate the installation and integration of C-E equipment within tactical vehicles.

b. Technical. Development of technical interface standards and the development of standard computer language, formats, protocols, and hardware permit more efficient use of the communications resources and provide greater flexibility. Operational facilities (OPFACS) interface directly and automatically with the communications system. A common processor family is used throughout the Army, thereby enabling more efficient machine-to-machine communications and greater degree of synthesis and analysis of data for presentation to the battlefield commander. Identification and development of interface requirements within all functional areas and the joint arena reduces the number of unique interface units, "black boxes", in the system. The overall thrust of fewer types of standard equipment significantly improves the maintainability, flexibility and efficiency of the system, thereby enhancing the commander's ability to more fully integrate his weapon systems on the AirLand Battlefield.

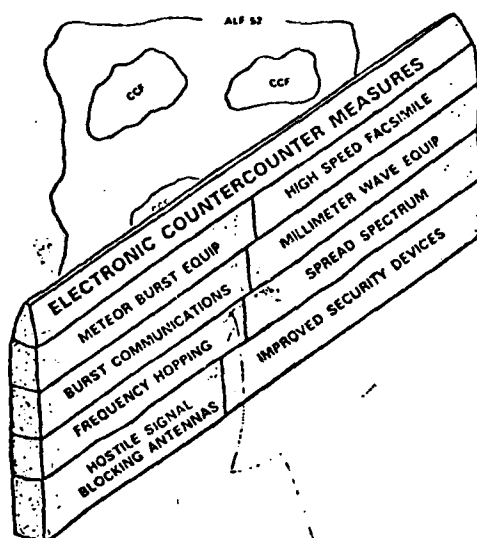
7. Communications in support of the close combat force (CCF):



- a. Communications tasks are accomplished with communications components that are:
- o Small, lightweight, easily repaired, and modular configured
 - o Transportable via strategic and tactical assets
 - o Cryptographically secure with no unique signature
 - o Reduced probability of intercept
 - o Electronic countermeasure resistant
 - o Electromagnetic pulse protected
- b. Communication capabilities are user operated and include:

- o Single channel combat net radios
- o Satellites
- o Facsimile
- o Data distribution devices
- o Mobile subscriber equipment
- o Automatic switching equipment
- o Non-electronic systems for information transfer
- o Transmission equipment interoperable and compatible with multiservice and combined forces systems
- o Equipments that transmit friendly force position and identification information automatically to C² data bases
- o Equipment designed to allow near real-time dissemination of info to facilitate integration of direct and indirect fire weapons systems

c. Because of the close proximity of the CCF to the Radio Electronic Combat (REC) threat, there is maximum application of electronic counter-countermeasures (ECCM).



Burst communications and high speed facsimile reduce transmission time and thus the probability of intercept and direction finding (DF).

Spread spectrum techniques such as frequency hopping and antenna phasing techniques are used to reduce the effectiveness of jamming.

Improved communications security devices built into communications equipment are developed to deny the enemy communications intelligence.

d. Communications transmission equipment is interoperable with multiservice and combined forces communications systems.

e. For communications over extended distances, secure satellite or high frequency (HF) radio is used.

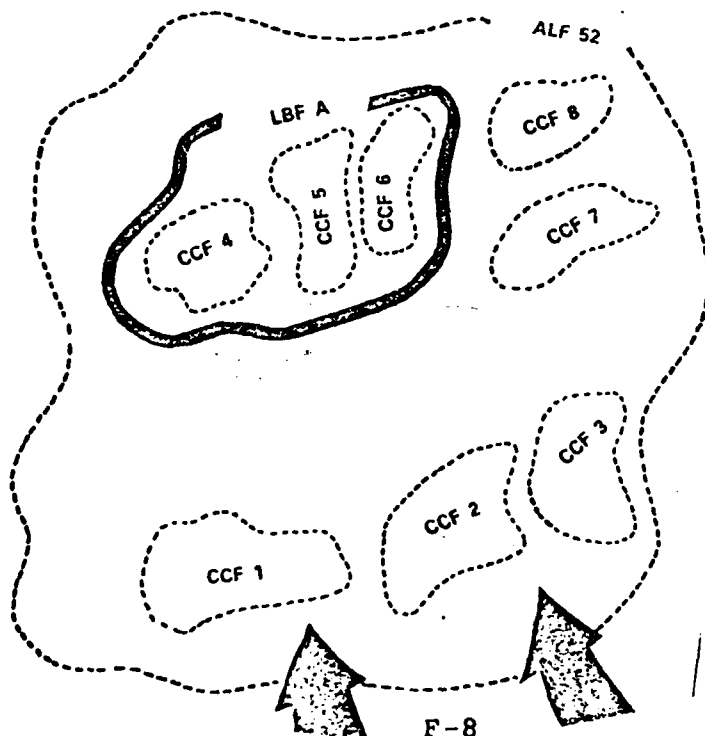
f. Combat net radios, satellite communications, the Army data distribution system or mobile telephone equipment are the primary means of communications between the CCF and the land battle force (LBF).

g. Friendly force position and identification information is transmitted automatically to command and control data bases.

h. In special applications, a meteor burst communications system is used to provide a ECM resistant communications system that minimizes outages in a nuclear environment.

i. Multiple transmission means using different portions of the frequency spectrum provide the robustness, resiliency, and redundancy necessary to ensure a high probability of information transfer both within the CCF and between CCF and the LBF.

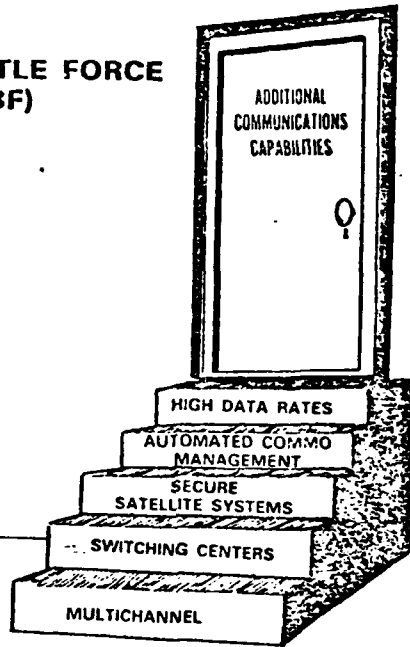
8. Communication in support of the land battle force (LBF):



a. If the LBF is activated for a specified period of time the communications capability is similar to communications for the CCF. The LBF employs user operated communications equipment to include single channel combat net radio, facsimile, data distribution equipment, automatic switching equipment, and telephone equipment.

b. Additional communications capability includes:

**LAND BATTLE FORCE
(LBF)**



Multichannel, both terrestrial and satellite for connectivity with the AirLand Battle Force (ALF), higher echelons and adjacent LBF.

Interface terminals permit the Army data distribution system to interoperate with the multiservice data distribution systems.

Switching centers permit mobile access throughout the LBF.

For long distance communications secure satellite communications systems complement the long-range capabilities of the HF communications systems.

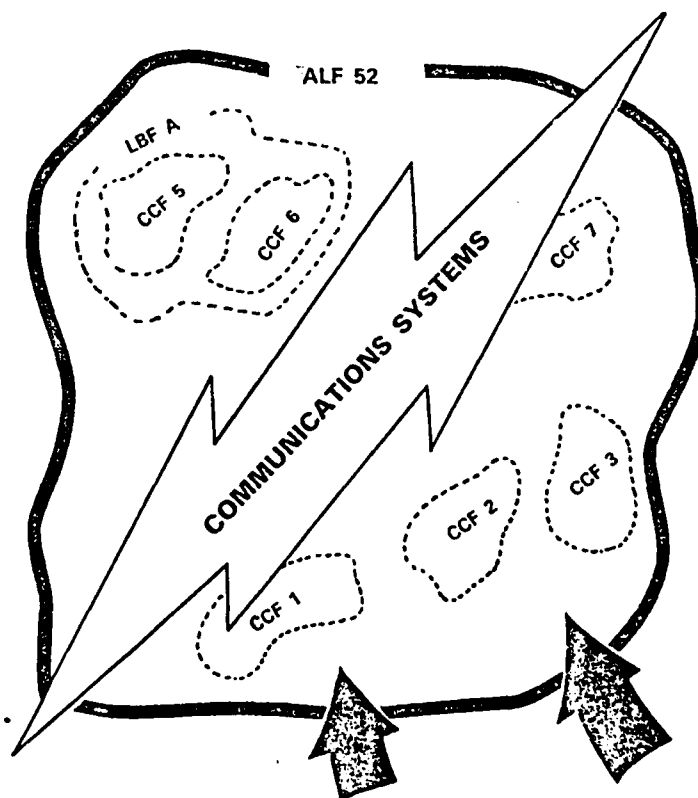
Automated communications management equipment.

c. The common user area communications system is the primary means for transmitting and receiving C² information and provides the means to integrate the command and control subordinate system (CCS²) of maneuver, fire support, air defense, intelligence and combat service support. User operated communications systems provide the intra-functional communications requirement.

d. Multichannel satellite, switching centers for mobile terminal and multiservice interface units will allow the transfer of joint and Army data to insure real-time interoperability between the land forces commander and multiservice elements. This assures coordination for battlefield air and air interdiction to support the longer range fire support weapons in the deep attack.

e. The total communications systems supports the collection processing and dissemination of intelligence information to CCF units regarding enemy elements which are about to enter their combat area. The communications system also supports the high data rates and security requirements of intelligence coming down from higher echelons and national intelligence systems regarding enemy movement from the LBF area of interest into LBF area of influence.

9. Communications in support of the AirLand Force (ALF).



a. The AirLand force commander integrates the AirLand battle and directs the land battle. Communications systems in support of the ALF consist of user operated equipment such as that in support of the CCF and LBF, as well as capabilities provided by a signal force tailored to the area.

b. The communications system is a common user, area type backbone system, featuring high capacities with an automation system for management and control of the communications system.

c. Transmission systems include both terrestrial and satellite multichannel of higher capacity than those used for the LBF. Such high capacity systems terminate national command and control links as well as all source intelligence systems.

d. The ALF communications system provides the means to distribute in a timely manner changes to mission directives. This allows accurate targeting and subsequent focusing of fire power, both land, air, and sea, to disrupt enemy activity and to engage follow-on enemy forces.

e. The communications system is interoperable with the communications systems of multiservice and combined forces.

f. Communication requirements for special operations forces (SOF) are provided by secure single channel and meteor burst radios operating in the HF, VHF, and EHF regions of the frequency spectrum. Such equipment will permit secure communications between the ALF and the SOF. En route communications are provided through jointly developed communications operating procedures and interoperable communications equipment.

10. Communications support of deployment operations.

a. Rapid deployment is enhanced through standardization of vehicular mounted communications equipment into "roll-on, roll-off" packages. Selected communications equipments will be configured to allow them to be air droppable. Tailoring the communications force for rapid build-up is enhanced through standardization.

b. Long-range communications requirements are satisfied through the refinement of multichannel HF equipment to include smaller more efficient antenna designs and a worldwide satellite communications system.

c. Range extension for single channel radios is provided by the use of unattended repeaters and improved airborne retransmission capabilities.

d. Airborne communications packages can be readily connected to any aircraft circuitry for power and external antenna use.

e. Enhanced mobility for communications equipment is attained through:

Integrated power sources and environmental control units.

Vehicles which incorporate signal mission requirements; e.g., ability to climb steep grades to establish hilltop communications relays.

Modulated laser over fiber optics cable replaces heavy conventional cable and wire.

Vehicular mounted, automatically erected antennas capable of placing antennas above the tree tops. Antennas will blend with the vehicular characteristics.

11. Focus on developments to implement ALB 2000 communications.

a. The year 2000 is close enough to make general predictions about threat and technology and at the same time far enough out to permit adjustments in planning. The latest communications technological advancements and methods are applied to provide a user owned and operated as well as an area communications system that is not manpower intensive and can continue to operate in a nuclear, biological, chemical or EW environment.

b. The communications requirements of the AirLand Battle 2000 concept drives the Tactical Communications Mission Area Analysis through the technology objectives espoused in the concept. The post-1995 communications network embraces those objectives as well as the capabilities of the objective communications system depicted in the 1976 INTACS Study and the 1980 INTACS Update.

c. Strategic. AirLand battle forces have rapid access to the national command authority (NCA) and to unified commanders for both strategic information and command and control decisions in the employment of forces or threat of force at the national level for securing national objectives. Strategic communications integrates all service and national communications systems to provide a worldwide Defense Communications System. This system interfaces with the theater of operation to provide direct lines of communications that are interconnected and interdependent.

d. Operational. Communication systems are designed to support planning and the conduct of campaigns of larger unit maneuvers to defeat enemy forces. Automation and communications networks support this planning effort by providing a near real-time information processing network which achieves redundancy through relays and alternate routing of digital data among sensors, maneuver control, fire support, air defense, combat service support, and intelligence electronic warfare data processors. Computers supporting this automation and communications system will be software and hardware compatible.

e. Tactical. The communications systems in support of small unit battles and engagements which destroy enemy forces are reduced in size and complexity, secure, EMP protected, jam resistant digital burst communications with no unique signatures that are operated by functional users. Multimedia input and output devices provide display of digital data in required formats.

f. Human dimensions. The intensity and lethality of the battle coupled with the emphasis on "high technology" war with communications support being provided on a 24 hour basis requires special "human" considerations. These considerations are:

Simplified man-machine interface.

Equipment designs that reduces fatigue and enhances the ability to operate for prolonged periods in a nuclear, biological, chemical or electronic warfare environment.

Stress reduction through psychological preparation.

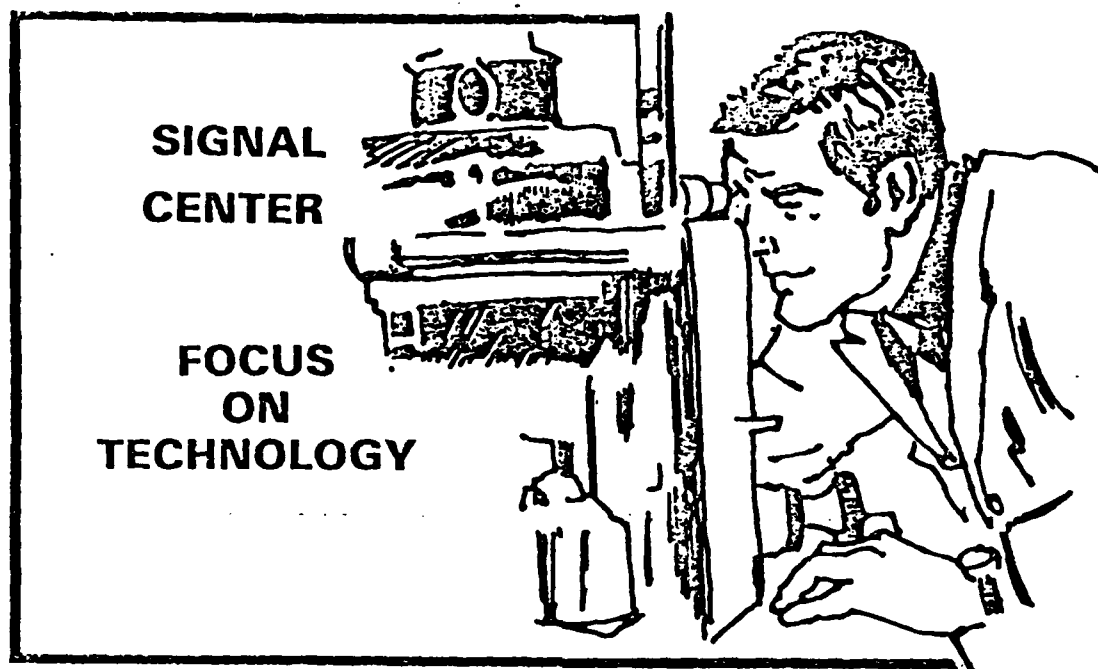
Leaders who can act (see, analyze, decide, direct) in absence of specific orders.

Superiors who encourage and support subordinate decision making.

g. Training and readiness. Communicators train as they will be required to communicate or fight on the AirLand Battlefield. The stress of battle, unexpected situations and continuous operations is duplicated or replicated in training. Signal teams are trained in measures to provide their own perimeter defense.

h. Organization structure. Standardization and simplification of equipment reduces the large number of MOSs and additional skill identifiers presently required to support communications in the field. This together with user operated communications equipment reduces the required number of signal and maintenance personnel.

12. Focus for technology.



a. Communications equipment that is simple to operate, self-diagnostic and has the capability of self-repair.

b. Communications equipment that does not present a unique signature.

c. Power systems that are mobile, reliable, have little or no acoustic, electronic or thermal signature and have reduced dependency on fossile fuels.

d. Accurate position and location devices that provide information automatically to command and control data bases.

e. Automation of network management and switching equipment that will provide automatic circuit restoration.

f. Reliable and accurate data communications systems that will allow distributed data processing and multiechelon data distribution.

g. Alternative transmission means; e.g., use of laser and infrared light as transmission paths.

h. Development of robotics and artificial intelligence (AI) systems to facilitate communications tasks.

d. Operational. Communication systems are designed to support planning and the conduct of campaigns of larger unit maneuvers to defeat enemy forces. Automation and communications networks support this planning effort by providing a near real-time information processing network which achieves redundancy through relays and alternate routing of digital data among sensors, maneuver control, fire support, air defense, combat service support, and intelligence electronic warfare data processors. Computers supporting this automation and communications system will be software and hardware compatible.

e. Tactical. The communications systems in support of small unit battles and engagements which destroy enemy forces are reduced in size and complexity, secure, EMP protected, jam resistant digital burst communications with no unique signatures that are operated by functional users. Multimedia input and output devices provide display of digital data in required formats.

f. Human dimensions. The intensity and lethality of the battle coupled with the emphasis on "high technology" war with communications support being provided on a 24 hour basis requires special "human" considerations. These considerations are:

Simplified man-machine interface.

Equipment designs that reduces fatigue and enhances the ability to operate for prolonged periods in a nuclear, biological, chemical or electronic warfare environment.

Stress reduction through psychological preparation.

Leaders who can act (see, analyze, decide, direct) in absence of specific orders.

Superiors who encourage and support subordinate decision making.

g. Training and readiness. Communicators train as they will be required to communicate or fight on the AirLand Battlefield. The stress of battle, unexpected situations and continuous operations is duplicated or replicated in training. Signal teams are trained in measures to provide their own perimeter defense.

h. Organization structure. Standardization and simplification of equipment reduces the large number of MOSSs and additional skill identifiers presently required to support communications in the field. This together with user operated communications equipment reduces the required number of signal and maintenance personnel.

Technological Summary

- o Equipment that is simple to operate
- o No unique signature
- o Better power systems
- o Accurate position and location devices
- o Automation of management and switching equipment
- o Reliable data distribution systems
- o Alternative transmission means
- o Counter effects of directed energy
- o Robotics and artificial intelligence systems

APPENDIX G
COMBAT SUPPORT, ENGINEER AND MINE WARFARE

PURPOSE. This concept describes combat support, engineer and mine warfare (CSEMW) operations in support of AirLand Battle 2000. This annex is limited to the normal engineer functions of mobility, countermobility, survivability, topography and general engineering. Other combat support functions are included in other annexes.

OPERATIONAL CONCEPTS

1. Key Elements.

a. When compared to present forces, the ALB 2000 engineer force has fewer members, is task-specific, has smaller equipment, and a greater capability.

b. Mobility, countermobility and survivability (M-CM-S) are designed into AirLand forces. When this design would seriously degrade the ability of a force to do its primary mission, then special purpose M-CM-S forces and equipment are provided.

2. Doctrinal Perspective. Engineers support military operations at all levels of war.

DOCTRINAL PERSPECTIVE

- o Strategic
- o Operational
- o Tactical

a. **Strategic Level.** Engineers provide world-wide map support. They identify locations for and, if necessary, rapidly improve or construct aerial or sea ports of debarkation.

b. **Operational Level.** Engineer elements support at the operational level by providing bases to support operations and roads, airfields, and landing zones to rapidly support operational redeployments. AirLand and Echelons above AirLand forces have the capability to concentrate engineer support. Included are capabilities to rapidly emplace bridging and dynamic obstacles, to reinforce terrain, to support extended lines of communication, and to deploy large formations laterally and in depth.

c. Tactical Level. Engineers provide mobility, countermobility, survivability, topographic and general engineer support of tactical operations.

3. Mobility. Mobility is the ability of forces to move freely about the battlefield, without hindrance from existing, reinforcing and force oriented obstacles or obstacles created by the havoc of war. Mobility is built into the close combat force, allowing missions to be performed in stride and under fire. Engineer systems enhance force mobility. Mobility includes counterobstacle, countermine and gap crossings. Unique aspects of mobility in urban areas are also discussed.

MOBILITY

- o In Stride
- o Under Fire

a. Counterobstacle. Remote systems detect and identify obstacles. All forces detect and neutralize or bypass obstacles with no loss of momentum. Simple obstacles are bypassed or neutralized by built-in capabilities. Complex obstacles incorporating several types of obstacles are breached with timely support of M-CM-S forces.

COUNTEROBSTACLE

- o Remote Detection
- o Robotic
- o Rapid

b. Countermine. Mines are unique obstacles in that they destroy and kill in addition to impeding movement. All forces conduct countermine operations anywhere mines are encountered. Standoff systems detect mined areas and breach complex obstacles. Close-range systems detect, breach and automatically report mined areas. Ultimately every combat vehicle detects, neutralizes and reports mined areas without operator assistance.

COUNTERMINE

- o Remote Detection
- o Standoff Breach
- o All Forces

c. Gap Crossings. Gap crossing capability is built into close combat forces. Additional support is provided by AirLand Engineer forces.

GAP CROSSINGS

- o Multiple Crossings
- o Broad Front
- o In Stride
- o Under Fire
- o Contaminated Environment

d. Urban Areas. Urban areas are mapped. Three dimensional terrain analysis shows access to and control of tunnels, sewer systems, elevator shafts, landing sites and utilities. Specialized equipment burrows under or plows through rubble in urban areas.

4. Countermobility. Countermobility includes using existing obstacles and developing artificial obstacles to delay, disrupt and canalize enemy formations and to destroy individual enemy soldiers, vehicles or components of these vehicles.

COUNTERMOBILITY

- o Target Oriented
- o Accurately Emplaced
- o Multiple Delivery

Delay and disruption provide the time to attack close in formations and following echelons. Topographic analysis identifies and prioritizes the major avenues of movement on the battlefield. Sensors and jammers are an integral component of obstacles, further increasing the targeting ability of close combat forces and degrading the command and control of the enemy. Close combat force commanders use automated systems to control friendly countermobility operations to the depth of their combat area. Data links exchange information for target value analysis with fire support control systems.

a. Obstacle Employment.

OBSTACLES

- o Disrupt battle plan
- o Remote craters
- o Remote demolitions
- o Linear vehicle traps
- o Tree blow down
- o Deep battle

All forces employ force oriented obstacles and integrated, existing, and reinforcing obstacles in offensive and defensive

operations. Static obstacles are prepared prior to battle. Obstacles emplaced dynamically by multiple delivery means are used to paralyze enemy forces during the battle anywhere on the battlefield. Remotely delivered, precision guided munitions are launched by aircraft, artillery or rocket to destroy bridges, power stations, and dams or to crater roadways, railroads, and runways. Reinforcing obstacles include tank ditches, mines, electronic barriers, rubble cities, and tree blowdown, blown bridges, foam fields and chemical contamination areas. In urban terrain, rigid foam barricades tie damaged vehicles and debris together to block accesses. Soft (liquid) foam prevents vehicle movement by fouling traction or stopping engines. Glue-like foams entrap personnel.

b. Mines. Mines are a special obstacle in that in addition to delaying, disrupting and canalizing threat forces they also destroy individual enemy soldiers, vehicles or vehicle components.

MINES

- o Disrupt battle plan
- o Destroy forces
- o Enhance weapon effectiveness
- o Restore breached lanes
- o Isolate objectives
- o Suppress fire support
- o Establish discriminating barriers
- o Guard urban areas
- o Protect CSS positions

5. Survivability. Survivability operations reduce the vulnerability of fighting and supporting forces by disrupting the cycle by which enemy forces see, analyze, decide, and fire to destroy friendly forces.

SURVIVABILITY

- o All forces
- o Countersurveillance
- o Deception
- o Movement
- o Dispersion
- o Cover

Camouflage, countersurveillance and deception disrupt the enemy's ability to see our forces. Jamming interferes with his ability to transmit information. Movement removes units before enemy forces can fire on them. Counterfire disrupts enemy capability to fire. Dispersion lessens effectiveness of area fire weapons. Natural and artificial cover protects against enemy fires.

a. Protective Emplacements. All units construct, prepare, and use emplacements for protection while retaining the capability to observe and attack the adversary. Emplacements protect against ballistic weapons, some nuclear warfare effects, chemical weapons, and weapons utilizing any spectrum of light energy.

PROTECTIVE EMPLACEMENTS

- o Rapidly emplaced
- o Expendable
- o Structure reinforcement
- o All forces
- o Protected logistics

b. Close Combat Forces. Close combat forces rapidly concentrate to attack enemy forces. Success in the battle is followed by equally rapid dispersion. Forces move to hide positions, rest and prepare to attack. Hide positions are characterized by integration of protected positions with countersurveillance and overhead cover. Close combat vehicles use protective structures when refueling, rearming, repairing, maintaining and allowing crew rests.

c. Logistics Area. Wide area obscurants cover logistic complexes to preclude accurate visual, electromagnetic and thermal observations. These obscurants are rapidly dispersed, harmless to personnel and immune to dispersal countermeasures by the enemy.

6. Topography. Information on natural and man-made land features and their effect on mobility, countermobility and survivability is provided at all echelons down to independent maneuver elements within the close combat force. Topographic support includes terrain analysis, provision of terrain data and maps, and topographic production.

a. Terrain Analysis. Terrain displays provide an instant appreciation of terrain comparable to a "terrain walk". Users request an overprint of trafficability, avenues of approach, obstacles and many other parameters. Each assessment is provided from the updated data base and compensates for existing climatic conditions. Terrain displays also provide the commander a rapid appreciation of how the enemy views the terrain. Position recording and reporting devices and video terrain displays transmit locations to integrating centers where reports are combined to form updated unit situation reports. The terrain analysis system supports obstacle planning, control, and reporting

and analytic software replaces human terrain analysis at all levels.

TERRAIN ANALYSIS

- o User oriented
- o Remote sensor input
- o Analytical software

b. Terrain Data and Maps.

TERRAIN DATA & MAPS

- o Point-of-use printing
- o Decentralized access
- o Automated data exchange

Hard copy maps are still the basic terrain information document for small unit planning and execution. They also provide information to allied formations that may not have the electronic capability for interface. Topographic and cartographic information is stored in data bases. Existing map products are optically scanned to create the initial data base. Data bases are updated by remote imagery scanning systems.

c. Production. Survey is performed automatically as a high order accuracy element of the position locating system. Remote and ground stations receive and transmit locations. As part of the position reporting system a terrain information mode is possible. The operator automatically updates the area's terrain data base. If the update is questionable, automatic verification is obtained by all source intelligence.

PRODUCTION

- o Real-time
- o Position locating system input
- o Automatic data update

7. General Engineering. General engineering operations involve construction, facilities, damage repair, power production, roadway maintenance and water supply support. Ports, airfields and LOC's are primary targets for enemy forces. Successful destruction of these targets would enable enemy forces to destroy our ability to fight without defeating our close combat forces in battle. Major engineer efforts are expended in maintaining these operational level facilities. Improvements in combat and support unit strategic, operational, and tactical mobility will significantly reduce ALB 2000 requirements for general engineer support from present levels. Even with this increased mobility, as long as units use land and sea LOC's or aerial ports, there is a continuing requirement for strategically and operationally deployable general engineer support.

GENERAL ENGINEERING

- o Economic**
- o Efficient**
- o Task specific**
- o Host nation support**

a. Road Construction and Maintenance. AirLand engineer forces keep roads open between the fixed locations and moving battle areas. Gaps with existing bridges have bypasses constructed for redundancy to increase the survivability of the crossing. Gaps which must be "bridged" are protected by obscurants, anti-aircraft mines and weapons systems, camouflage and tonedown and deception structures. Computers monitor wear and damage information on all key structures.

b. Air and Marine Port Construction. Construction, expansion and repair operations are accomplished at the theater level by special engineer organizations using unique equipment and technological skills. Marine port underwater construction and reconnaissance is performed by diving support teams organic to engineer elements. Airfield structures provide redundancy and reduced vulnerability. Camouflage and base tone down and deception reduce targeting accuracy.

DAMAGE REPAIR

- o Rapid setting materiel**
- o Reuse of rubble**
- o Repair kits**
- o Robotic equipment**

c. Facilities. Construction is limited to requirements which cannot be satisfied by the host nation and also cannot be met with tents and other field shelter systems. Buildings which must be constructed are erected by AirLand engineer units using prefabricated, prewired and preplumbed panels made of high-strength, low-weight, foam materials.

d. Power Generation. Large power generators with cable distribution systems have been replaced by generators decentralized to each using device. Power systems emit no identifiable signature. Power is generated using multi-fuels to include nonfossil fuels. Conceptually power may be beamed to using units by semi-fixed generation or solar collection stations. All equipment uses standard power inputs and converts it internally to specialized voltages or cycles as needed.

e. **Water Supply.** AirLand force engineers locate sources of water. When necessary these engineers sink wells and provide pumping stations, pipelines and other necessary facilities to obtain water.

8. Chemical, Biological and Nuclear Defense. This capability is built into every engineer organization and equipment item on the AirLand 2000 battlefield. Survivability shelters incorporate positive air pressure, self-sealing characteristics, and NBC filters. Large areas of terrain are decontaminated by foam-sprays which contain the vapor hazard, visibly mark the "hot" areas, and neutralize the agents. NBC reporting is done by use of the position recording and reporting system and is immediately reflected on all situation maps.

9. Engineer Combat Forces. All engineers are as mobile and survivable as supported forces and are highly decentralized.

ENGINEER FORCE

- o Mobile
- o Survivable
- o Decentralized

a. **Close Combat Forces (CCF).** Integrated into the The close combat force is an M-CM-S capability. The close combat force also includes a small terrain exploitation team which has a quick map capability and a terrain analysis terminal. Equipment intensive teams provide M-CM-S support of close combat formation missions. These teams are self-sufficient in communications, repair parts, and maintenance. Barrier materials and materiel to construct protective positions are compact and efficient so this materiel is replenished during reconstitution.

CLOSE COMBAT ENGINEER

- o Organic to teams
- o Compatible chassis
- o Specialized fighting vehicle

b. **Land Force.** There are no engineer units at the Land force echelon. The Land force headquarters element has a terrain and engineering staff capability.

c. **AirLand Force (ALF).** AirLand force engineer organizations consist of specialized mission support elements. These centrally controlled teams provide timely support to close combat forces forces beyond that which CCF engineers can provide. ALF engineer organizations each have their own separate schedule for resupply and reconstitution. When supporting in CCF areas, they can be reconstituted with the supported force.

AIRLAND ENGINEER

- o Mission support elements
- o Central control
- o Specialized equipment

c. Theater Engineers. Theater level engineers orient on specific general engineering tasks. They provide preplanned, task specific teams, equipment and materiel to accomplish general engineer tasks. They also provide theater wide digital data base for all weapons and command and control systems. If needed, M-CM-S support to Theater level administrative and logistics forces is provided by cross-leveling AirLand force engineers.

THEATER ENGINEERS

- o Preplanned support package
- o Task specific teams
- o Topographic data base

d. Combat Missions. During AirLand 2000 battles, combat engineer units "fight as Infantry" when required. Design of AirLand 2000 engineer combat organizations and equipment specifically provides the communications, mobility and firepower needed to reconfigure to infantry units.

10. Focus for Technology.

Technology should focus on:

a. Mobility.

o Light-weight, low-cost mine detection and neutralization systems which permit every assault vehicle to detect, neutralize, and report mines without operator assistance.

o Standoff detection and neutralization systems.

o Non-explosive neutralization systems for reduction of conventional and remote mines

COUNTERMINE/COUNTEROBSTACLE

■ DETECTION

- REMOTE — HIGH RESOLUTION OPTICAL, IR, MILLIMETER WAVE, ALL NATIONAL ASSETS
- MIDRANGE — IR, MILLIMETER WAVE, OPTICAL HIGH RESOLUTION FROM AIRBORNE PLATFORMS OR ROBOTIC GROUND VEHICLES
- CLOSE-IN — PULSED MILLIMETER WAVE TECHNOLOGY
- BIOSENSOR MINE/EXPLOSIVE
- INSTANT DATA LINK — REPORTING & MAPPING DATA LINK
- READOUT/ALERT

located in areas where explosive destruction is not practical or where clearing of bypassed or breached fields must be done.

COUNTERMINE/COUNTEROBSTACLE

■ NEUTRALIZATION

- STAND-OFF - IMPROVED EXPLOSIVE CHARGES, PENETRATING FRAGMENTED MUNITIONS; MAGNETIC, ACOUSTIC & SEISMIC DUPLICATORS
- CLOSE-IN - BUILT IN (ON BOARD) INTEGRATED SYSTEMS FOR MULTIPLE FUZED MINES
 - ROBOTIC CDM WITH INTEGRATED COUNTERMINE/COUNTEROBSTACLE SYSTEMS
 - NON-EXPLOSIVE IN MORA/MOUT
 - VEHICLE HARDENING

- MARKING

- SYSTEM INTEGRATED WITH REMOTE NEUTRALIZATION MEANS

o Foam and composite material technology for high compressive strength structural uses in bridges, flotation devices, road airfield surfaces, and access or egress soil stabilization.

o Simple to erect, low cost fixed bridges for use in support role. Mobile, efficient, interchangeable, repairable, assault bridges which permit emplacement and operation in NBC, artillery and direct fire environment.

b. Countermobility.

o Remotely deployed intelligent, robotic, automatic, weapon stations.

o Lighter vehicles. The current M-1 tank and Divad Gun represent the largest land combat vehicles. Future vehicles will be physically smaller, lighter, and more agile.

BRIDGING

■ BUILT-IN CAPABILITY

- FAMILY OF LIGHT FIGHTING VEHICLES WITH SWIM AND ACCESS/EGRESS CAPABILITIES

■ ORGANIC CAPABILITY

- ASSAULT BRIDGES/RAFTS
- FOAM & COMPOSITE MATERIALS
- UNDERWATER BRIDGES
- REMOTELY DELIVERED BRIDGES

■ SUPPORT BRIDGE CAPABILITY

- STANDARDIZED COMPOSITE BRIDGE COMPONENTS
- FOAM, PLASTIC CEMENT FOR ACCESS/EGRESS

MINES

■ ICOMS

- ADVANCED EXPLOSIVE/FUSE TECHNOLOGY
- RAPID EMPLACEMENT/RECOVERY MACHINE

■ ELECTRONIC

- PROXIMAL ATTACK
- WEAPON SYSTEM COMPONENTS

OBSTACLES

■ IMPROVED EXPLOSIVES

■ NONEXPLOSIVE

- FOAM
- COMPOSITE MATERIALS

o Mines which provide vehicle "belly kills" and track or wheel kills or standoff kills with equal alacrity.

o Fuses which identify friend or foe, can be command detonated, time detonated, or time extended; and are produced at low cost.

o One shot cratering charge capable of hand emplacement or remote delivery.

o Explosives or directed energy which penetrate structural concrete and steel with single explosive shot to either destroy or crater the target.

o High energy explosives to replace atomic demolitions.

o Foams which can be used to create nonexplosive barriers, stop vehicle engines, and entrap personnel.

CAMOUFLAGE/COUNTERSURVEILLANCE

- DETECTION OF INTRUSION
- COATINGS
- SIGNATURE REDUCTION
- ELIMINATION OF UNIQUE SIGNATURES
- OBSURANTS

DECEPTION

- SIGNATURE GENERATION/PROJECTIONS
- DECOYS
- DIVERSION

COUNTER INTRUSION

- SENSORS

FIGHTING/PROTECTIVE POSITIONS

■ RAPID EXCAVATION

- SOIL/MACHINE INTERFACE
- ROBOTICS

■ MATERIALS

- LIGHTWEIGHT, HIGH STRENGTH FABRICS/MATERIALS
- DIRECTED ENERGY/CHEMICAL PROTECTION

ON BOARD LIFE SUPPORT SYSTEMS

■ WASTE WATER TREATMENT

■ INTEGRATED HEATING/COOLING/FILTERING SYSTEMS

c. Survivability.

o Camouflage built-in as an integral part of all vehicles and individual clothing and equipment.

o Self-camouflaging protective emplacements and structures.

o Local and wide area weather control.

o Man portable high speed digging devices.

o Lightweight, protective emplacements.

o Larger domed protective emplacements.

o Lightweight protective structures to protect ground-based weapons systems.

o Improved obscurants, generating and dispersal systems.

TERRAIN INFORMATION

- SENSORS
- ALL SOURCE
- MAPS/TERRAIN DISPLAYS

TERRAIN ANALYSIS

- PREDICTIVE MODELS
- DATA BASE

NAVIGATION

- PADS
- ORGANIC MODULES

d. Topography.

o Topographic systems will be built into the close combat forces. These capabilities include position reporting and recording systems and terrain information and video terrain displays.

o Real time remote terrain sensors.

o Automated terrain and weather analysis with graphic output.

o On line, precision, map size color graphic printer.

o To support these systems there exists the need to provide an automated terrain data base, remote survey capability and the ability to remotely scan terrain imagery in order to automatically update the data base.

o If the need exists for hard copy maps, an instant multi-color printing capability will be needed which can print either from hard copy or computer controlled vide screen.

e. General Engineering.

o Routine use of "state of the art" civilian construction equipment.

o Beamed power to point of use from collection stations.

o Computer monitoring of key structures for wear and damage information.

o Automated photogrammetric input and computer-based civil engineering techniques for road design in difficult terrain.

o Materiel and techniques for rapid runway repair.

f. Engineer Units.

o Engineer vehicles with same base vehicle as the close combat force, externally mounted, externally accessible tool boxes an integral personnel decontamination chamber, and internally operable cybernetic tools.

o Individual Chemical, Biological, radiological

CONSTRUCTION/MAINTENANCE

- INTEGRATED TOTAL SYSTEMS
- MATERIELS
- ROBOTICS
- SENSORS
- COMPUTER BASED DESIGNS

RESTORATION

- REPAIR AND MAINTENANCE OF UTILITIES
- SANITATION

decontaminating apparatus.

11. **Focus for Training.** All units are trained to conduct of battle drills for bridging and minefield breaching. Engineer units are trained to reconfigure and fight as infantry. This concept places significant responsibilities to accomplish M-CM-S functions in all units. This requires that small unit leaders in all branches be trained to supervise M-CM-S tasks.

12. **Focus for Organizations.** Organizations are specially formed, trained and equipped to fight in special environments, i.e. urban areas, deserts, mountains. The emphasis that this concept places on all units conducting M-CM-S tasks requires that developers of organization TO&E's build these capabilities into the organizations.

13. **Focus for Human Dimensions.** All forces operate on a continuous basis. Forces are not "stood down" from the field, but use sensors and robotics to maintain operations during rest periods.

APPENDIX
COMBAT SUPPORT, ENGINEER AND MINE WARFARE SUBFUNCTIONS

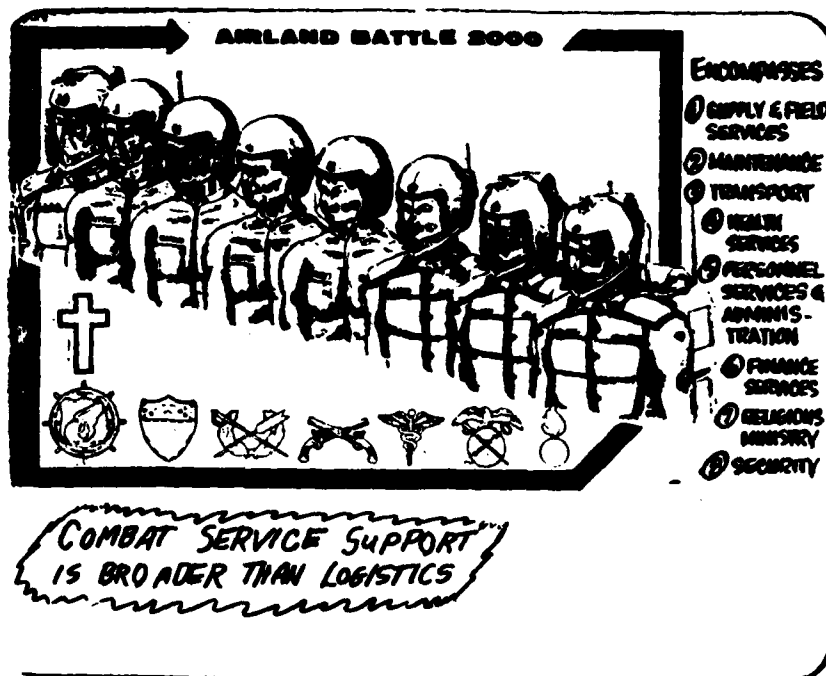
SUBFUNCTION	M	CM	SURV*	TOPO*	GE*
Countermine*	P	-	-	S	S
Dry Gap Crossing	P	-	-	S	S
Wet Gap Crossing*	P	-	-	S	S
Obstacle Reduction*	P	-	-	S	-
Maint Roads/Trails	P	-	-	S	S
Agress/Egress	P	-	-	S	S
Mine*	-	P	-	S	-
Obstacles*	-	P	-	S	-
ADM	-	P	-	S	-
Plan/Report/Control of Obst.	S	P	S	S	S
Fighting Positions	-	S	P	-	S
Protective Positions	-	-	P	-	S
Deception	S	-	P	-	S
Camouflage	S	-	P	S	-
Prot Revetment	-	-	P	-	S
Chemical decontamination	S	-	S	-	-
Chemical Protection	S	-	S	-	S
Chemical Prophylaxis	-	-	-	-	-
Terrain Analysis	S	S	S	P	S
Survey	-	-	-	P	S
Map Stor/Dist	-	-	-	P	-
Carto/Repro	-	-	-	P	-
Area Damage Recovery	S	-	S	-	P
Power/Heat/Cool	-	-	-	-	P
Port (Air and Sea) Const	-	-	S	S	P
LOC (Road, Rail Pipe) Maint	S	-	-	S	P
Facility Const	-	-	S	-	P
Diving	S	S	-	-	P
Close Combat			(Special Function)		

NOTES:

- P Primary functional area proponent interest
- S Secondary interest but must be addressed
- No greater or less interest than other mission areas
- * Indicates separate operational concept is planned
- M Mobility
- CM Countermobility
- GE General Engineering

APPENDIX H COMBAT SERVICE SUPPORT

PURPOSE. This annex sets forth the operational concept to conduct combat service support (CSS) operations in support of the AirLand Battle (ALB) 2000.



OPERATIONAL CONCEPT.

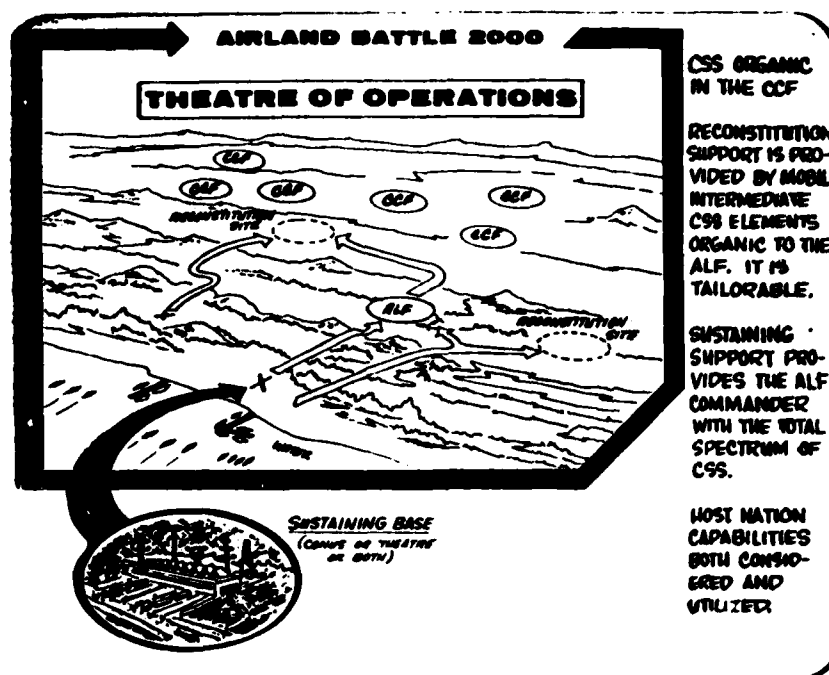
1. **CSS operations.** On the austere battlefield of the 21st century, CSS performance is characterized by mobility, automation, and independent operations within discreet, centralized control of the ALB force. CSS includes:

- LOGISTICS (SUPPLY, MAINTENANCE, FIELD SERVICES, TRANSPORTATION)
- PERSONNEL
- HEALTH SERVICES
- SECURITY

- Degrees of support are definable by the level of support rendered.

- ORGANIC SUPPORT
- RECONSTITUTION
- SUSTAINMENT

- The CSS attitude is one of austerity in support. CSS must become more disciplined and opportunistic, keying on technology to improve support of combat operations.



2. Organic support. Support that enables units to operate on a self-sustaining basis until it is necessary for external CSS units to reconstitute them. Some of its characteristics are:

- 0 INTEGRAL TO CCF, COMBAT SUPPORT AND CSS
- 0 SELF SUSTAINING FOR DETERMINED PERIODS OF TIME
- 0 ON BOARD SPARES: PREFABRICATED PLL
- 0 REDUNDANCY, SELF REPAIR FEATURES
- 0 BUILT IN DIAGNOSTICS AND TMDE
- 0 REPAIR AND EQUIPMENT EXCHANGES FACILITATED BY ON BOARD MHE AND ROBOTICS
- 0 SURVIVABILITY COMPATIBLE WITH COMBAT FORCES

- Units extend periods between reconstitution through maximum reliance on cannibalization. CSS personnel are trained in multi-disciplinary functions in order to keep weapon systems operable.

3. Reconstitution support. Support that brings forces up to a mission capable condition. It encompasses routine supply, initial issue, force regeneration and special supply. Reconstitution is performed whenever a unit has depleted its stocks of consumables, been inflicted with casualties or damage that renders it mission

incapable, or when personnel have reached their endurance limit. Some of the features of reconstitution support are:

- O ORGANIC TO THE AIRLAND FORCE
- O REFURBISHES ORGANIC SUPPORT STOCKS AND BRINGS FORCES UP TO OPERATIONAL STATUS
- O SECURE COMMO AND ADP LINKS ESSENTIAL
- O STOCKS ARE PREPACKED, MODULARIZED, READY FOR USE
- O ROBOTICS AND MATERIAL HANDLING EQUIPMENT

- The survivability of reconstitution sites is enhanced by deception to confuse the enemy. Organic deception devices replicate storage sites, CSS units, and reconstitution sites to increase the survivability of reconstitution forces by providing the enemy more targets than he can assess or service. Local security is provided by ALF security forces while enroute and in the vicinity of the reconstitution site.

- CSS elements performing reconstitution receive ready-to-issue stocks from the sustaining base. Personnel provided by the sustaining base are ready for duty. Equipment is rendered ready to fight by ALF-CSS elements.

- Stocks for CSS units are received from the sustaining base. At reconstitution sites personnel are assigned or exchanged as appropriate; unserviceable components are exchanged for serviceable components, onboard spares and supplies are replenished, major end items are issued. Inoperable items are collected and evacuated to the sustaining base for reclamation.

4. Sustaining support. Support that provides to the ALF commander the total spectrum of CSS necessary for conducting and supporting successful combat operations. The sustaining base includes:

- O CSS OPERATIONAL ENVIRONMENT INCLUDING CONUS PRODUCTION BASE BUT ALSO EXTENDING INTO THE THEATER OF OPERATIONS
- O SUSTAINMENT BASE OPERATIONS UNDER CONTROL OF DOD
- O ALLIED OPERATIONS SUPPORT REQUIRED
- O INTEROPERABLE ADP AND COMMO SYSTEMS
- O AUTOMATIC TRANSLATION OF ALPHA NUMERIC AND AUDIO MESSAGES
- O LOTS UTILIZED INCLUDING TEMPORARY HOSELINES
- O THEATER WIDE ASSET VISIBILITY
- O HOST NATION SUPPORT RESOURCES

- Recipients of prepackaged, containerized stocks are known before shipments arrive. Resources are delivered to the ALF echelon immediately upon receipt. Critical fringe items are provided through normal reconstitution procedures or can be

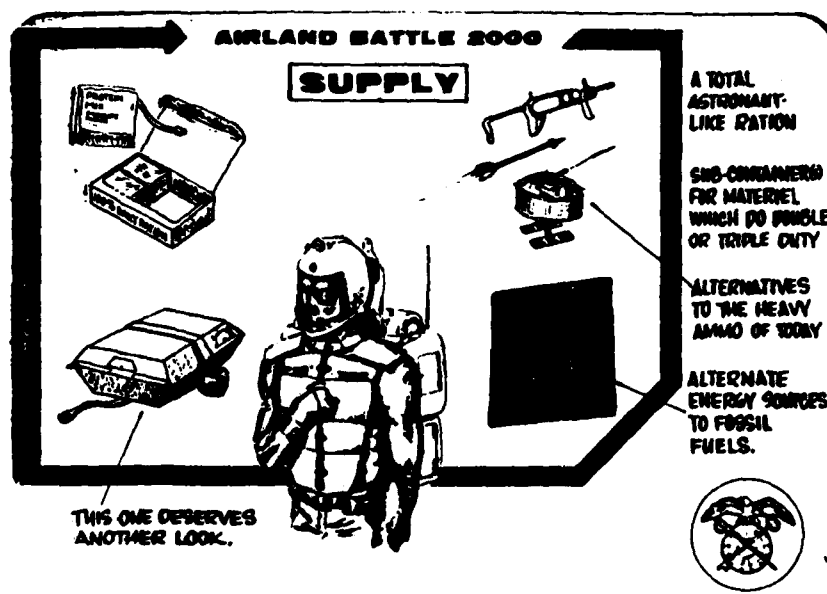
delivered on an emergency basis. Normally containerized, scheduled shipments are throughput to the user via reconstitution efforts for use just in time as needed.

5. Logistics.

- The logistics elements (supply, maintenance, transportation, and field services), as a subset of CSS, furnish three key factors through organic support, reconstitution support, and sustaining support. Logistics fixes, fuels, and arms the weapons system. Logistics support is limited to combat essentials. Conduct of organic support and reconstitution support is performed in a manner that minimizes the need for personnel to exit vehicles. Robotics remove and replace major components while controlled by CSS operators from remote locations or from within the CSS vehicle. Support is enhanced by system redundancy, microchip technology, standardized procedures, and cross training. Deception is used to conceal support operations.

- Support requirements are electronically predicted based on automatically transmitted reports. Systems provide consumption and operational reports at prescribed intervals, at specified levels of consumption, when elements become inoperable, or upon demand. Communications is enhanced by secure data links, automatic status reporting and system redundancy. It provides near real time asset visibility throughout the operational area and is fully integrated into the command and control system of the supported force.

- Logistics is system, rather than manpower, intensive; speed and accuracy are achieved by reliance on remotely operated, multifunctional machines and systems, increased system reliability, automatic sensors, robotics, and miniaturization. A consolidated MCC and MMC are utilized at the ALF to provide for maximum efficiency of effort and to provide the ALF commander with total asset visibility.



6. **Supply.** Supplies are packaged at the manufacturer to facilitate shipment, decontamination, handling and use at each echelon. Maximum use is made of MHE and robotics. Bulk items are packaged in containers that allow factory to user shipment. Upon receipt in the sustaining base, these containers are placed upon specially configured transporters for movement to the user. Transfer of the containers is effected utilizing portable MHE and robotics. Containers are fitted with adapters which allow them to mate directly with supported systems and issue selected quantities of the particular type of supply.

- Property records are automatically updated with each turn-in, issue and destruction transaction and entered into the data base. Resources are delivered to the supported unit during reconstitution based on the automatically transmitted reports of consumption. Requisitions are submitted only for special items and items not provided for by routine reconstitution support packages. The requisition action is handled by software packages that automatically validate descriptions, stock identification codes, and authorization for the item in the requesting unit.

Class I

- O IMPROVED COMBAT RATION (NUTRITION SUSTAINMENT MODULE (NSM))
 - PREPARED, READY TO EAT
 - FORTIFIED WITH VITAMINS, MINERALS, ANTI-STRESS COMPONENTS
 - ADDITIVES ASSIST IN PREVENTING DISEASE OR EFFECTS FROM CBR CONTAMINATION
 - CREATE AWARENESS OF "BULK SATISFACTION"
- O INTAKE OF NSM COMPATIBLE WITH CBR GARMENTS
- O NSM PACKAGED TO RESIST CBR CONTAMINATION
- O WATER
 - REQUIREMENTS REDUCED
 - WATER EXTRACTED FROM ALTERNATE SOURCES (WASTE WATER, COMBUSTION AND IGNITION SOURCES)

Class II

- O CLOTHING AND INDIVIDUAL EQUIPMENT IS LIGHTWEIGHT, LONGWEARING, DISPOSABLE MATERIEL
- O RENEWABLE CBR PROTECTION
- O COMMON UNIFORM MINIMUM DISTINGUISHING CHARACTERISTICS
- O ADJUSTABLE SIZES
- O CLIMATICALLY CONTROLLED CBR SUITS FOR LONG TERM OPERATIONS WEAR
- O UNIQUE COUNTERMEASURES ARE HUMAN ENGINEERED AS WELL AS LOAD BEARING EQUIPMENT (LBE)
- O LIGHTER, STRONGER, MORE FLEXIBLE AND ADAPTABLE TENTS AND SHELTERS
- O PERSONAL BIONIC ATTACHMENTS TO IMPROVE HUMAN CAPABILITIES
- O PASSIVE CAMOUFLAGE

Class III

- O ALTERNATE FUELS (ENERGY) MUST BE DEVELOPED**
 - ELECTRICAL**
 - CHEMICAL**
 - SOLAR**
 - SELF WINDING**
 - WIND**
- O DEPENDENCE ON BULK, FOSSIL FUELS MUST BE MINIMIZED**
- O FAST LAYING, FLEXIBLE, STURDY HOSELINE**
- O HIGH POWER, LOW BULK, LONG LIFE POWER PACKS**
- O CAPTURE USE OF KINETIC ENERGY**
- O AUTOMATIC RECHARGE SYSTEMS**

Class IV

- O HIGH TECHNOLOGY MATERIELS**
 - LIGHTWEIGHT, HIGH STRENGTH**
 - PREFABRICATED, EXPENDABLE**
 - FOAMS**
- O BARRIERS OR OBSTACLES CREATED BY EXPLOSIVES, CHEMICALS, DECEPTION, FOAMS**

Class V

- O SMALL, HIGH VELOCITY, HIGH DESTRUCTION ROUNDS**
- O FIRE AND FORGET ROCKETS**
- O DIRECTED ENERGY WEAPONS**
- O RETRIEVABLE MINES**
- O COMPLETE ROUNDS (NO EXTRA FUSES REQUIRED) (DIAL FOR EFFECT CAPABILITY)**
- O NO SPECIAL HANDLING REQUIRED**

Class VI

- O PERSONAL ITEMS INTEGRATED INTO THE CLASS I DISTRIBUTION SYSTEM**
- O SPECIAL ITEMS FOR RECREATION AND STRESS REDUCTION**

Class VII

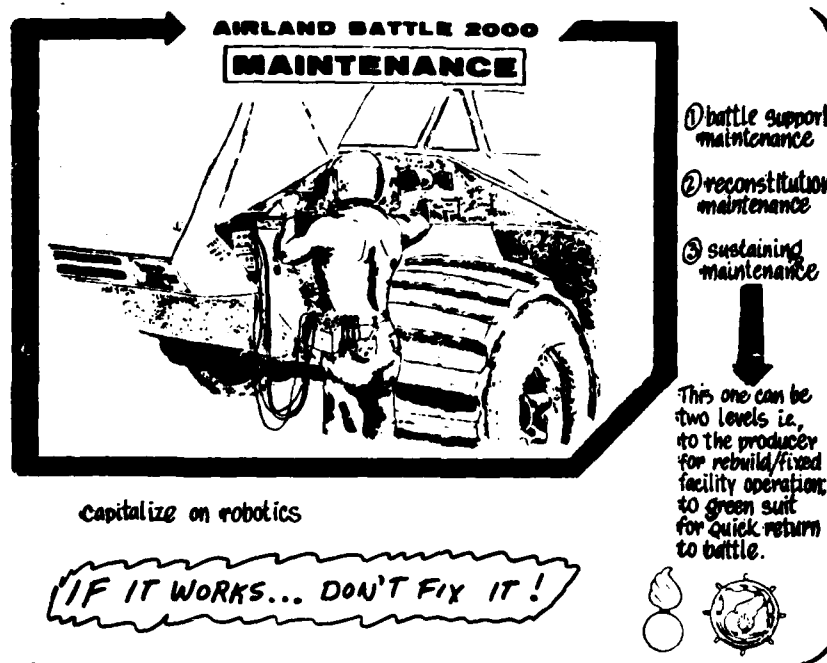
- O FIGHTING SYSTEMS MUST BE DESIGNED FOR EASE OF PREPARATION FOR OPERATIONAL READY STATUS**
- O MODULAR CONSTRUCTION FOR EASY MAINTENANCE**
- O MINIMUM USE OF FOSSIL FUELS**
- O CBR PROTECTED, EASE OF DECONTAMINATION**
- O LIGHTWEIGHT TO FACILITATE RECOVERY AND TRANSPORTATION**
- O ON BOARD SPARES, MHE, AND ROBOTICS. ALSO BUILT IN REDUNDANCY, AUTOMATIC NAVIGATION, SELF REPAIR**

Class VIII.

Medical materiel is addressed in the Health Services section.

Class IX

- O MODULAR IN DESIGN TO FACILITATE REPAIR OF END ITEMS
- O DIRECT EXCHANGE ORIENTED DURING BATTLE SUPPORT AND RECONSTITUTION
- O COMPOSED OF LIGHTWEIGHT, HIGH STRENGTH MATERIEL
- O APPLICATION OF MINIATURIZATION AND MICROCIRCUITRY
- O HIGH RELIABILITY, SELF REPAIR, SYSTEM REDUNDANCY
- O USE OF CONTROLLED EXCHANGE AND CANNIBILIZATION



16. Maintenance. Maintenance is characterized by:

- O A THREE DIMENSIONAL, HIGHLY MOBILE SYSTEM
 - CCF CREW OPERATOR (ORGANIC SUPPORT)
 - CSS MOBILE TEAM (RECONSTITUTION)
 - CSS BASE TEAM (SUSTAINING BASE)
- O MODULARIZATION OF END ITEM AND REPAIR PARTS FACILITATES REPAIR
 - COMPONENT EXCHANGE
 - CONTROLLED REPLACEMENT
- O ON BOARD AND MOBILE TMDE FOR FAULT ISOLATION

- O AUTOMATION THRU MHE AND ROBOTICS ASSISTS MAINTENANCE OPERATIONS
- O STOCKAGE OF COMPONENTS OR MODULES AT SUSTAINING BASE: CSS MOBILE TEAM AND CCF CREWS ONLY HAVE ON BOARD SPARES
- O EQUIPMENT DESIGN FACILITIES RECOVERY, RESUPPLY, EVACUATION, AND SALVAGE OPERATIONS
- O POSITION LOCATING DESIGNATORS (PLD) REPORT LOCATIONS ON UNSERVICEABLE MATERIEL
- O COMPONENT OR MODULE REPAIR TO SUPPORT END ITEM RECLAMATION

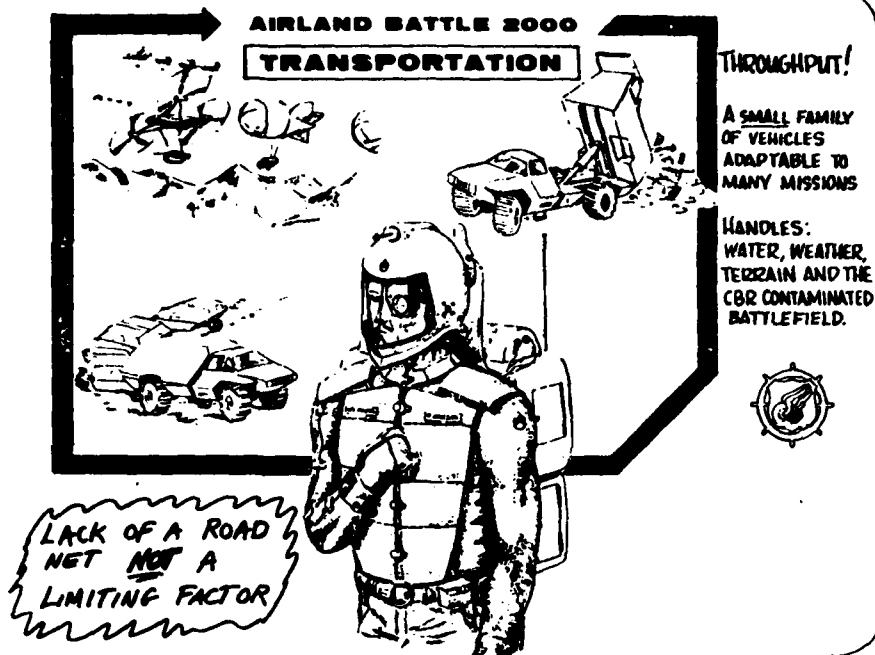
- End items of equipment are designed to modular principles to enable any one module or combination of modules to be removed and replaced on the battlefield within repair time limits driven by the tactical environment. End item modules are equipped with test and diagnostic equipment to rapidly and accurately diagnose a malfunction. Automation and robotics are found at each level of the maintenance system; e.g., crew or operator.

17. Organic maintenance is limited to crew performed duties using robotics, as necessary, involving the removal and replacement of components, modules, and assemblies using on-board spares, controlled exchange, and cannibalization of component or module if resupply is delayed. There is no stockage of components or modules, other than on-board spares. Recovery, resupply, evacuation, and salvage operations of components, modules, and assemblies is a CSS function using specially designed equipment.

18. Reconstitution support maintenance operations concentrate on end items repair, recovery, evacuation, salvage, and resupply to CCF and CS units. Recovery, evacuation, and salvage include all classes of supply. Repair of components, modules, and assemblies is performed to support the repair of end items.

- Extensive shop stock of modules, components, and assemblies is kept for the resupply of on-board spares, and the repair of end items at downsites or in an area away from the immediate tactical threat.

19. The sustaining base performs reclamation, resupply of components, modules, assemblies, and end items from diverse air, land, and sea sites using skilled military and civilian personnel. In addition, automated robots perform fault isolation checks and perform repairs to components to include mechanical as well as electronic repairs. These robots operate on a 24 hour basis and are impervious to chemical or nuclear contamination. Selection of maintenance operations to be performed in the AO is determined by the sustaining base commander based upon required turn around time, resources locally available, and anticipated rates of loss, damage or failure.

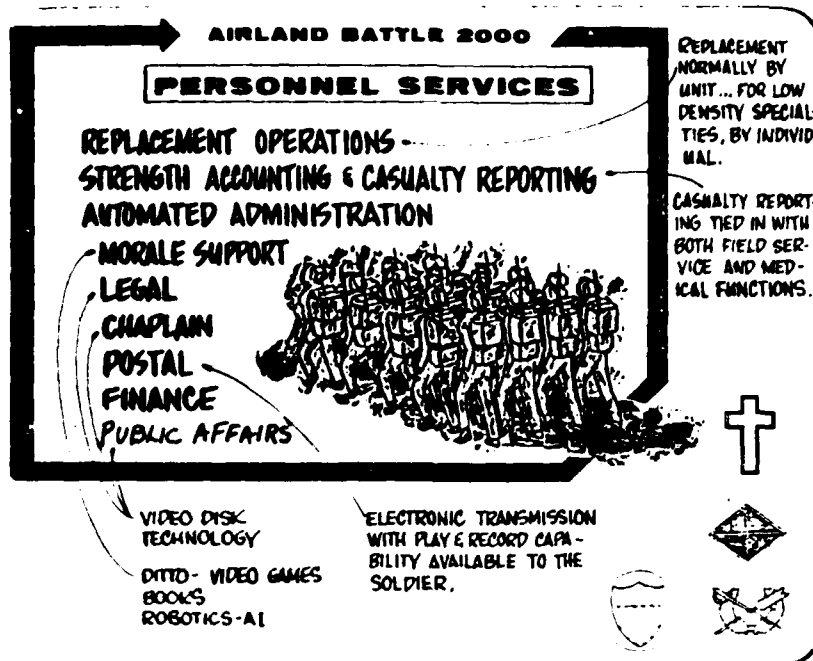


20. **Transportation.** Transportation elements organic to the ALB 2000 force respond to directives from a combined MMC-MCC. Timely transportation is provided to the force by use of transportation devices that are characterized by:

- O MINIMAL EXPOSURE OF CREWS
- O SELF DEFENSE CAPABILITY
- O SECURE COMMO AND DATA LINKS
- O MHE AND ROBOTICS HANDLED CONTAINER, MODULARIZED CARGO CASES
- O INHERENT BREACHING CAPABILITY
- O AUTOMATIC NAVIGATION DEVICES
- O REMOTELY PILOTED VEHICLES (E.G., DRONES)
- O AIRDROP CARGO SYSTEMS REQUIRED

21. **Field services.** Field services support will be limited to graves registration and bath operations. Other traditional services will be eliminated as not combat essential.

- O REDUCED REQUIREMENT FOR LAUNDRY AND CLOTHING EXCHANGE
- O ELECTRONIC CLEANERS
- O TOWLETTES AND LOTIONS ARE USED BETWEEN "BATHS"
- O CHEMICALS STUNT HAIR GROWTH AND RETARD BODY FUNCTIONS
- O ELECTRONIC BODY SENSORS AND BEACONS
- O HASTY BURIAL (FOAMS, DISINTEGRATORS)



22. Personnel service support. Personnel support includes:

- | | |
|--|---|
| <ul style="list-style-type: none"> <input type="checkbox"/> REPLACEMENT OPERATIONS <input type="checkbox"/> STRENGTH ACCOUNTING <input type="checkbox"/> CASUALTY REPORTING <input type="checkbox"/> PERSONNEL SERVICES <input type="checkbox"/> ADMINISTRATIVE SERVICES <input type="checkbox"/> LEGAL SERVICES <input type="checkbox"/> CONTINUOUS ASSESSMENT OF PERSONNEL RESOURCES DURING CCF OPERATIONS <input type="checkbox"/> SELECTED PERSONNEL SERVICES PROVIDED DURING RECONSTITUTION <input type="checkbox"/> PERSONNEL SERVICES SUPPORT ORGANIC TO ALF AND INTEGRATED TO THE SUSTAINING BASE | <ul style="list-style-type: none"> <input type="checkbox"/> CHAPLAIN ACTIVITIES <input type="checkbox"/> POSTAL OPERATIONS <input type="checkbox"/> FINANCE SERVICES <input type="checkbox"/> PUBLIC AFFAIRS <input type="checkbox"/> MORALE SUPPORT |
|--|---|

23. Replacement operations.

- ☐ Casualty estimation models for units and critical MOS available on hand held computers.
- ☐ Electronic video display of unit or troop location, status, and other critical information.
- ☐ Reconstitution of units using computer assisted assessments of arriving replacements and hospital returnees.

24. Strength accounting.

- o Unit and troop sensors provide an accurate and current picture of the unit to all command levels.
- o Hand held computer and transmitters provide lowest level units with means of forwarding strength figures and casualty data.
- o Electronic video display of unit size, automatically updated as lower level units provide input data.

25. Casualty reporting.

- o Sensors worn by soldiers provide location, degree, and cause of incapacitation.
- o Personnel data cards electronically transmit data from the combat unit to the receiving personnel support unit.
- o Interconnecting casualty reporting system with financial, postal and strength accounting systems.

26. Personnel management actions.

- o Automated devices assess physical and psychological fitness of soldiers and record assessments for use in personnel decisions.
- o Electronic records accession and revisions via voice entry.

27. Administrative services.

- o Paperless mode - electronic records.
- o Automated systems which utilize voice accessions and entry.
- o Soldier electronic personnel record (microchip) card.

28. Morale support services.

- o Individual orientation.
- o Stress reducing games which are portable, carry their own power source, and are MOS skill related.

29. Chaplain activities.

- o Two-way live video between chaplains and troops.
- o Prerecorded video.

30. Legal services.

- o Legal aid or recorder (artificial intelligence machine with expert system-voice interaction).

- o Video transcripts.

31. Postal services.

- o Digitized mail.

- o Facsimile transmission.

- o Video disk and cassettes.

32. Finance services.

- o Electronic checkbook - personnel data card. No cash for soldiers in area of operation.

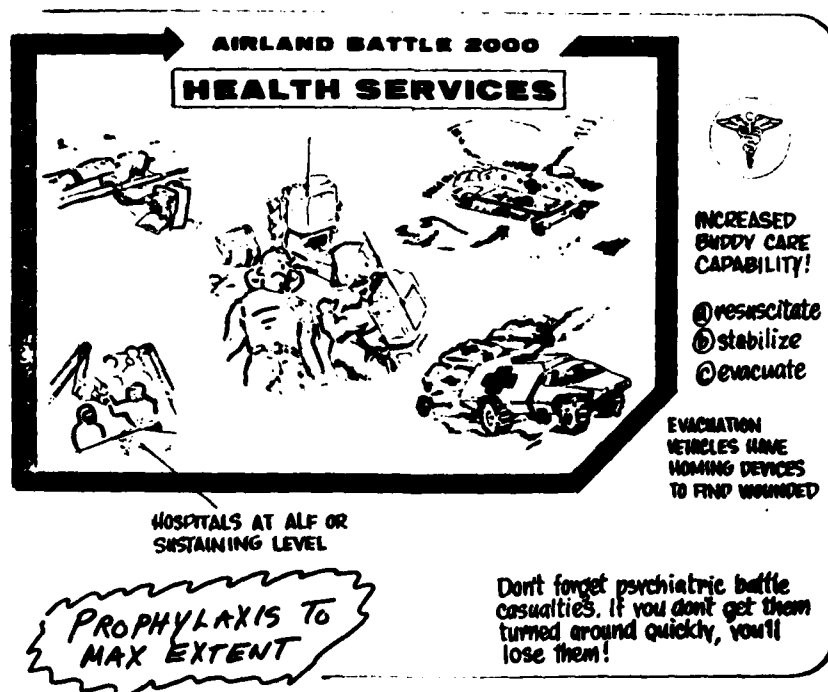
- o Telecomputer paymaster.

- o Automatic update of finance file.

33. Public affairs.

- o Portable video disc PAO (Hometown news release) recording.

- o Voice recall of stored video information.



34. Health services. Health services complements the CSS objective of support to the soldier by providing routine and emergency medical care. Dedicated medical care insures individuals are treated quickly and respectfully to minimize discomfort. Health services includes:

- O INCREASE IN SELF OR BUDDY AID
- O ORGANIC TO CCF
- O ORGANIC TO ALF (AREA SUPPORT) INTEGRATED TO THE SUSTAINING BASE
- O MEDICAL SUPPORT RESPONSIVE TO TYPE, LOCATION AND VOLUME OF CASUALTIES
- O PRIMARY USE OF AIR AS EVACUATION MEANS
- O TREATMENT AND HOSPITALIZATION
- O EVACUATING AND REGULATING
- O MATERIEL SUPPLY, MAINTENANCE AND OPTICAL MGT
- O LAB SERVICES
- O VETERINARY SERVICES
- O BLOOD BANK SERVICES
- O DENTAL SERVICES

- Health services addresses the reality of high casualty rates, multiple wounds, delayed incapacitation, and psychiatric battle stress.

- Various prophylaxis measures are required that assist in avoiding or minimizing injury due to directed energy devices or NBC weapons. The CCF has an organic medical treatment facility to provide emergency, resuscitative, and limited resuscitative surgery services. Air evacuation is utilized. Homing devices locate wounded personnel. Electronic access to higher levels of medical support provides consultation and diagnostic services.

35. Medical treatment.

- o Modular hospital. Mission adaptable, highly mobile, fully air transportable, and as small as operationally feasible.
- o Improved burn patient handling procedures.
- o Teleradiography
- o Video consultation and diagnosis
- o Bionic parts
- o Wound healing injection mandating partial early recovery (WHIMPER).
- o Nongravity dependent IV infusion system.
- o Antishock medicine.

- o Nonperformance degrading analgesics.
- o Spray on artificial skin or dressing.
- o Nonsuture wound approximating device.
- o Nongas field anesthetic.
- o Noninvasive diagnostic device.
- o Suspended animation.
- o Effective long term blood substitute.
- o Multispeciality AMEDD personnel.
- o Abdominal wound effect delay medicine.
- o Mycotoxin antidotes.
- o Self-aid and buddy-aid.
- o Microanalysis laboratory equipment.
- o Hand held x-ray device with telecommunications capability.
- o Video consultation and diagnosis.

36. Patient evacuation.

- o Central mobile evacuation air platform.
- o Suspended animation.
- o Robotics.
- o Patient location signal (auto start).
- o Airland evacuation platform with all weather capability and missile evasive technology.

37. Preventive medicine.

- o One shot immunizations.
- o Universal antiviral vaccine.
- o Universal antibacterial vaccine.
- o Self-analysis machine.
- o Prophylactic - CBR without performance degradation.

- o Mycotoxin Prophylaxis.
- o Robotics.
- o Insert protection (eye) (laser, flash, fragmentation).
- o High altitude adaptation medicine.
- o Heat or cold adaptation medicine.
- o Anti-VD medicine.
- o Universal insect repellant not removed by sweating or bathing.
- o Anti-fatigue medicine without degradation to performance.
- o Anti-stress medicine without degradation to performance.
- o Hearing protection against noise without degradation of performance.

38. Supply, optical and maintenance.

- o Oxygen generation.
- o Blood substitute.
- o Microcomponent replacement.
- o Surgical correction of vision to 20/20.
- o Water recycle.
- o Oxygen extraction.

39. Dental.

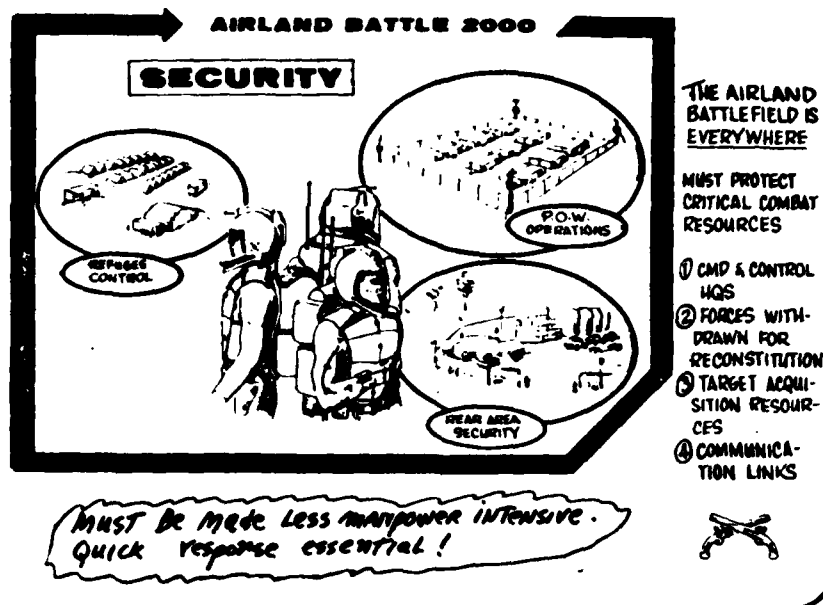
- o Chemical spray for teeth - protects 6 months to 1 year.

40. Veterinary.

- o Improved food inspection analysis equipment.
- o Dehydrated food (no inspection).
- o Continuous CBR monitors to detect contaminated rations.

41. Blood bank services. Whole blood and blood substitute requirements are supplied by the CONUS base. State-of-the art procedures reduce volume and extend shelf life.

- o Microanalysis equipment to detect protein deterioration.



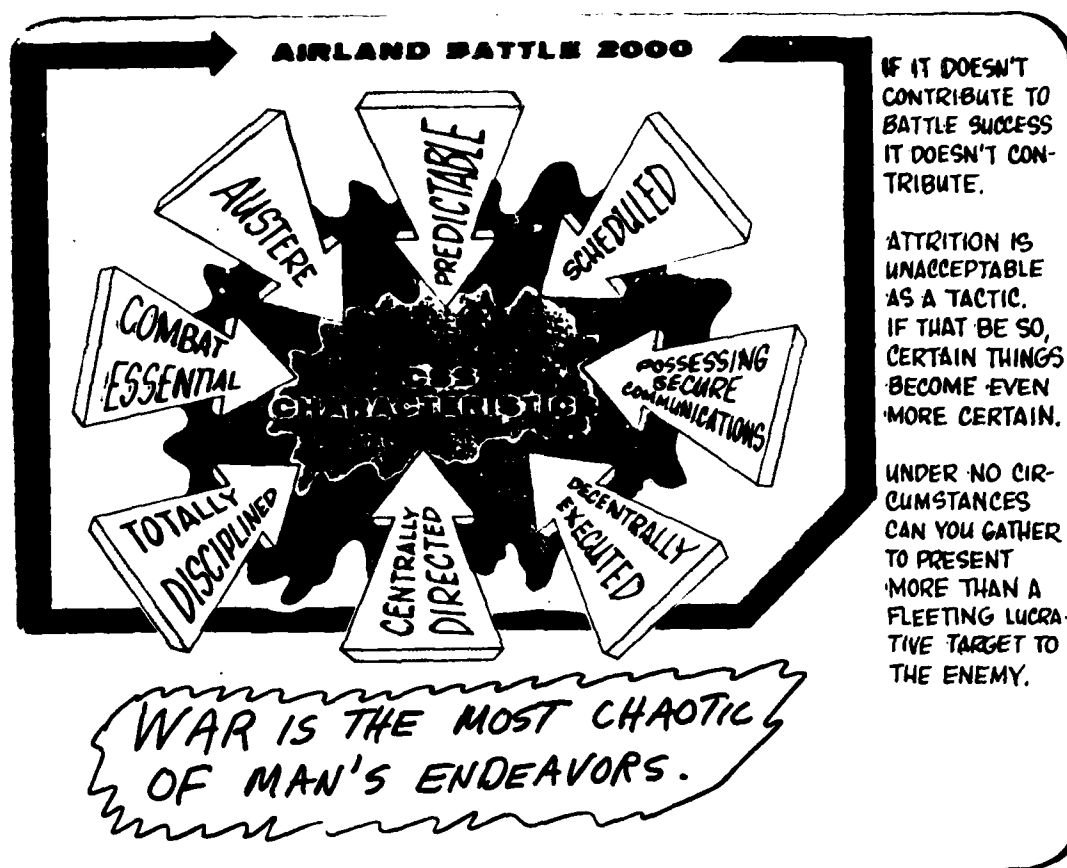
42. Security. Security operations include:

- O LIGHT THREAT OR ANTI-THREAT FORCE**
- O CIRCULATION CONTROL**
- O ENEMY PRISONER OF WAR OPERATIONS**
- O CRIMINAL INVESTIGATIONS**
- O REFUGEE CONTROL MEASURES**
- O US MILITARY PRISONER CONFINEMENT**
- O TEMPORARY INCAPACITATING CONTROL MEASURES**
- O NONLETHAL RESTRAINING DEVICES**
- O LIGHTWEIGHT, EASILY CONSTRUCTED CONTROL FACILITIES**
- O SECURE COMMO LINKS, REAL TIME DATA, AUTOMATION**
- O REMOTE SENSORS, VIDEO OBSERVATION, SUPPRESSION DEVICES**
- O REMOTELY PILOTED VEHICLES**
- O FRIEND OR FOE DISTINGUISHING DEVICES**

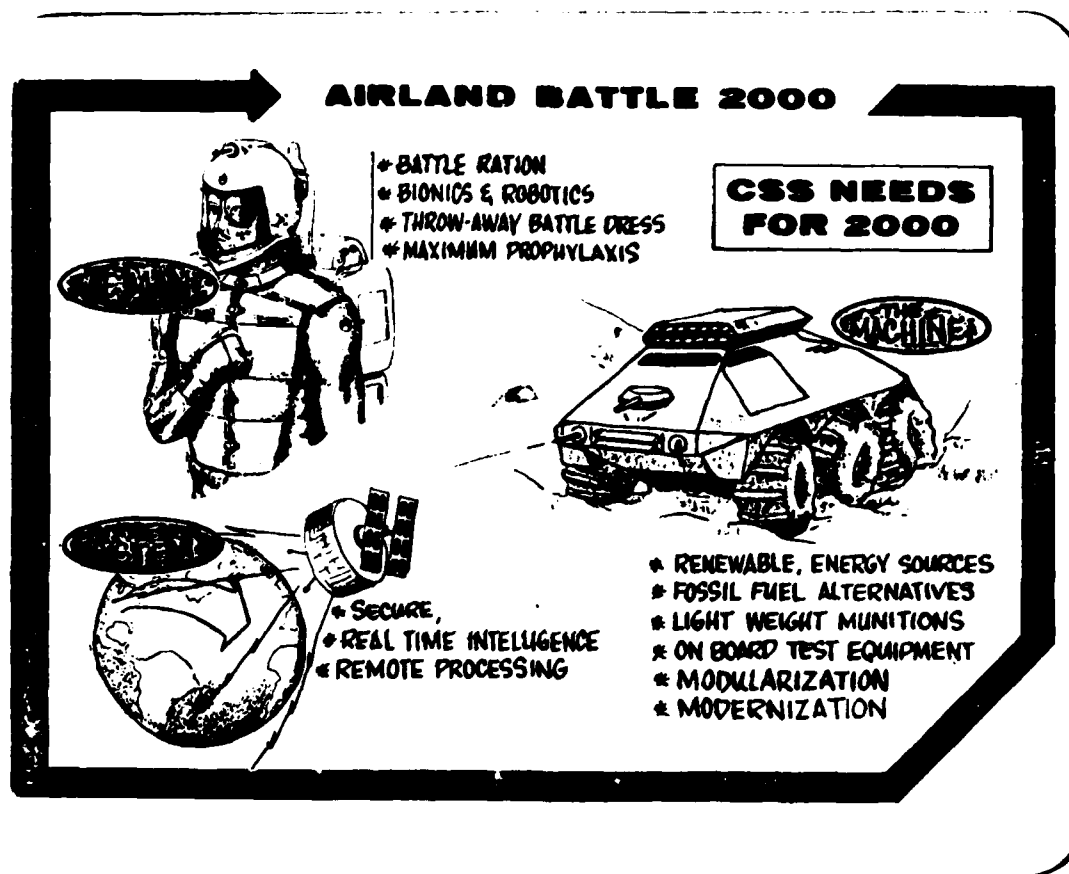
- Security forces are organic to the CFF and ALF echelon. The forces require vehicles that provide mobility, protection, survivability, and firepower compatible with vehicles used by the CCF. These forces are extremely light and can conduct selfsufficient, sustained operation for extended periods. In order to protect sustaining and reconstitution forces and facilities, security forces are equipped with an array of remote sensors, video observation and suppression devices, and remotely piloted vehicles. These devices can distinguish friend from foe and, when directed, cause the enemy to either react, become channelized, or suffer destruction. Enhancements for movement control include remotely controlled vehicular control devices and computerized monitors. The receipt, processing, and accounting of

EPW, internees, and US military prisoners are accomplished through totally automated information systems. Prisoners and internees are afforded NBC protection and decontamination measures. They are contained in nonhostile areas, utilizing backhaul transportation. Criminal investigations employ sophisticated detection and analysis equipment and computer information systems.

43. **Summary.** Future logistics doctrine must fit the anticipated battlefield. The future battlefield will be far different from the past and current peacetime activities. Logisticians must develop alternatives to current doctrine that maximize procedural changes and capitalize on technology.



- There is an absolute requirement for a disciplined and responsive CSS system. In addition to centralized control of assets and services, a concept must be developed to direct the flow of assets, to control resources and meet needs just in time to be effective. If this goal is achieved, it will save soldiers efforts, reduce waste in the production systems, and provide maximum combat power during war.



**APPENDIX I
ARMY AVIATION**

PURPOSE. This concept describes army aviation in support of AirLand Battle 2000.

OPERATIONAL CONCEPT.

1. The very essence of AirLand Battle 2000 is embodied in army aviation. The dynamics which make up the modern battlefield include:

DYNAMICS OF THE BATTLEFIELD

- **MASS**
- **MOBILITY**
- **MOMENTUM**

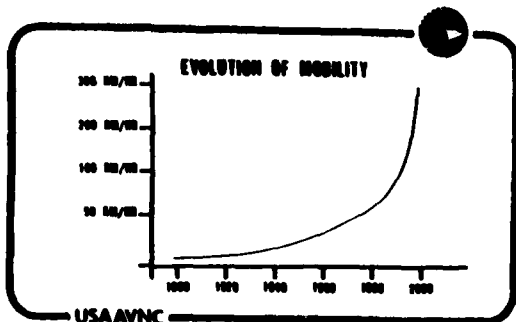
— USAAVNC —

Army aviation battlefield mobility multiplies the commander's combat mass allowing him to achieve the requisite combat power at the decisive point in the battle. Simply put, aviation provides the ability for the AirLand Force Commander to mass rapidly according to the following formula:

AVIATION AS A MASS MULTIPLIER

$$\begin{array}{ccccc} \text{FORCE} & = & \text{MASS} & \times & \text{ACCELERATION} \\ \downarrow & & \downarrow & & \downarrow \\ \text{COMBAT POWER} = \text{GROUND COMBAT FORCES} & \times & \text{AVIATION} & & \end{array}$$

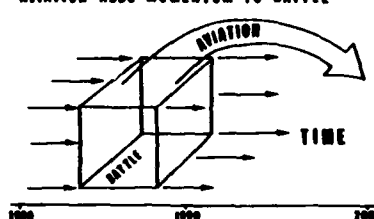
2. Since 1900, the army's mobility has increased steadily. Since 1942 when army aviation was introduced, that mobility has increased at an accelerated rate. In the 1980's that mobility



continues to accelerate as we bring in new aerial systems. For the 21st century the mobility potential is greater. To date army aviation's greatest contribution has been the ability to rise above the tyranny of terrain by operating in the third dimension (airspace).

In the future as aviation's vast mobility potential is realized, the ability of aviation to overcome the fourth dimension (time), will greatly add to the momentum required to win on the AirLand 2000 Battlefield.

AVIATION ADDS MOMENTUM TO BATTLE



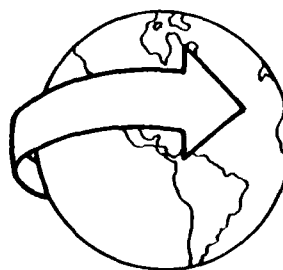
3. In the year 2000 army aviation is all-manned aerial elements of the army and those unmanned platforms organic to aviation.

4. As we envision AirLand Battle 2000, the very nature of aviation to support the three levels of war.

- Strategic Level:

Able to self-deploy, aviation can be a powerful show of force instrument, and has the ability to collect strategic intelligence, thereby completing the strategic level.

STRATEGIC LEVEL



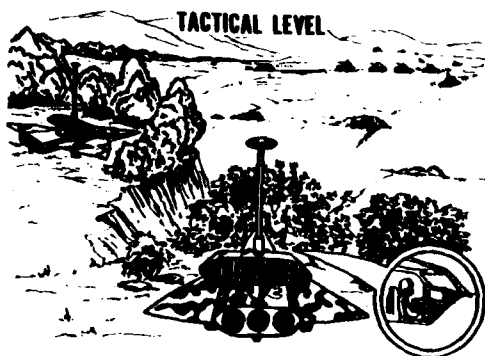


- Operational Level:

As a principle form of maneuver, aviation's fire power, mobility, ability to mass, and capability to operate independently provides the AirLand Force Commander a key implement at the operational level.

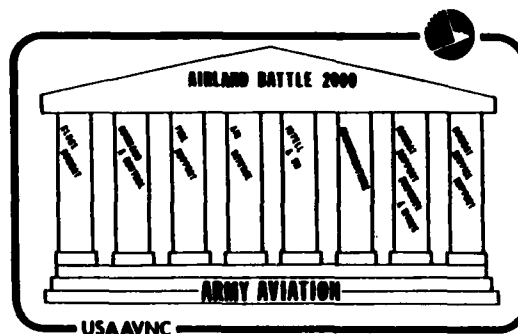
- Tactical Level:

At the tactical level army aviation is integral to all aspects of close combat operations.



5. Small aviation organizations are structured to operate continuously in all types of terrain, weather, and battlefield environments. These units possess sufficient Command and Control and Combat Service Support to perform independently or operate as part of a combined arms force. Weapons employed by aviation are multicapable, able to destroy any enemy, ground or air. Aviation forces are high technology laden and epitomize mobility; this is critical to survival for aerial elements on the ALB 2000 Battlefield. The above characteristics coupled with the leadership, training, and resulting will makes aviation a key implement for the successful AirLand force. Aviation forces as characterized, employ multicapable aerial systems which are occupant and platform protected and maintainable. These systems assure no unique signature, ease of decontamination and economy of personnel. Refinement of the man-machine interface provides an increase in capability. These systems utilize robotics, micro-electronics, and minaturization.

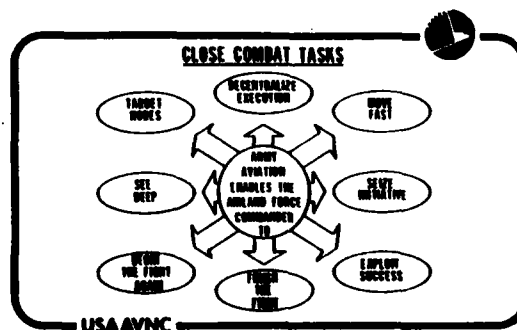
6. Army aviation is integrated into the AirLand Battle Forces as a matter of necessity, force design, and battlefield dynamics. Aviation is an integral part of all the other functional areas.



a. Close combat. Aviation's greatest contributions on this battlefield are made as a maneuver element in the area of close combat. Aviation extends the ability of the AirLand Force Commander in each close combat task. Through the employment of special electronic mission aerial platforms and aeroscouts, aviation extends the commander's ability to see close and far.

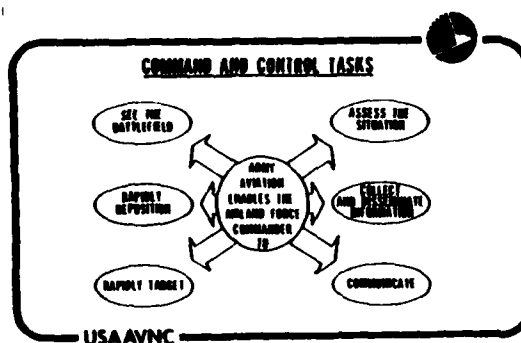
The inherent mobility of aviation with its organic C² and self-sufficiency provides the commander an organic capability to target critical nodes, 360 degrees outward and decentralized execution, to destroy enemy combat forces and other high value targets with maneuver forces. Aviation's mobility, speed, and flexibility, through rapid employment, resupply, and reemployment, allows the commander the ability to:

- Move fast to strike....
- And to seize the initiative. This allows the Commander to rapidly....
- Exploit successes and assures....
- Continuous destruction of the enemy at the decisive point
- Aerial combat support and combat service support elements provide the required sustainment support for forces to rapidly....
- Begin the fight again

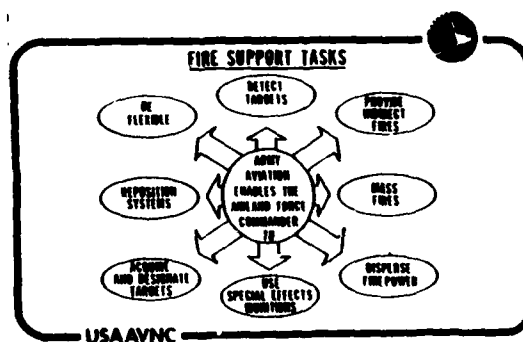


b. Command and control.

In the AirLand Force's command control effort, army aviation enables the AirLand Commander to see the battlefield utilizing specially equipped electronic platforms and aeroscouts. Real-time information about the enemy allows the commander to rapidly assess the situation and react in the correct manner. The ability to collect and disseminate friendly and enemy information enhances the Commander's capability to properly assess courses of action. The ability to communicate through aerial retransmission and data burst systems provides a two-way instantaneous communications link to all elements of the AirLand Force, facilitating the monitoring and control of combat operations. The Commander's ability to rapidly target and then attack provided by field artillery aerial observation platforms and aeroscouts allows for detection and destruction of the enemy at maximum range. Mobility is paramount in command and control. The fluid battlefield of AirLand Battle 2000 requires combat forces that attack, displace, and attack again in rapid succession. Aviation is the optimum force for this requirement. Highly mobile, responsive, without a unique signature, aerial forces allow for the rapid repositioning of combat forces to attack where least expected.



c. Fire support. Army aviation's ability to move rapidly about the battlefield unrestricted by terrain provides the ALF Commander's fire support effort the necessary flexibility to attack enemy targets that other weapon platforms cannot detect, engage, or respond to in time. Army air elements rapidly detect targets and provide the AirLand Force with an area fire weapon system capable of destroying lightly armored vehicles and infantry. These munitions can be delivered using direct fire techniques. The capability of air elements to rapidly mass their fires and

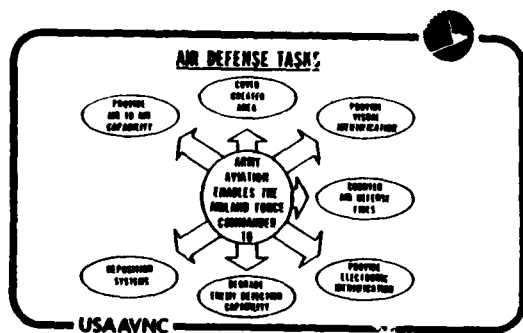


disperse, allows the AirLand Force to attack targets of opportunity with a large volume of fire, throughout the battlefield.

Aerial elements can deliver large volumes of precisely positioned obscurant, illumination, and special effects munitions. Aircrews call for and adjust artillery fires onto the target. Using a sophisticated target acquisition system, aircrews adjust fires and can designate targets for precision-guided munitions while masked from enemy detection. Aircrews are trained to employ all fire support systems available to the AirLand Force Commander. Army aviation rapidly transports weapon systems, supplies and personnel about the battlefield. Increasing the fire support unit's capability to provide the AirLand Force with firepower throughout the battlefield on a sustained basis.

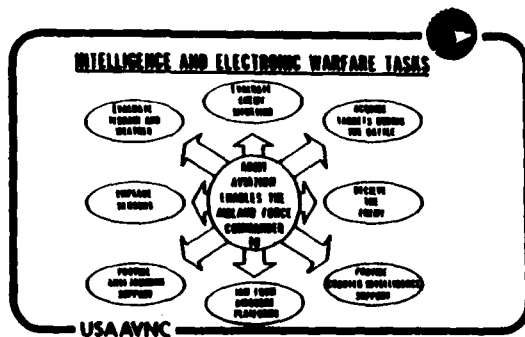
d. Air defense. Army aviation engaged in a combat role significantly enhances the air defense effort by engaging enemy air elements with air-to-air weapons. This extends the air defense umbrella for ground forces well beyond the main battle area and provides protection against a low level enemy not targeted by land-based weapons. This also provides army air elements a self-defense capability, which allows them to operate where land-based air defense systems cannot provide the required protection. The ability to make positive visual identification

provides intelligence information required for air defense units to engage targets before the enemy can inflict destruction upon friendly forces. The ability of army aviation to acquire and destroy enemy air defense weapons extends air defense's area of influence over the battlefield. Special aerial platforms are employed to electronically detect movement of aerial forces in the enemy's rear area. This information allows air defense to position forces so as to provide the best air defense coverage at the appropriate time and location. These



elements may be employed in the main battle area to degrade the enemy's electronic capability to acquire friendly air by transmitting radar jamming signals. Army aviation's ability to rapidly transport personnel and equipment about the battlefield allows air defense to provide the best air defense protection based on the most current intelligence. Movement of weapon

systems and supplies by air minimizes the time the weapon system is out of action and provides the capability to maintain sustained operations.



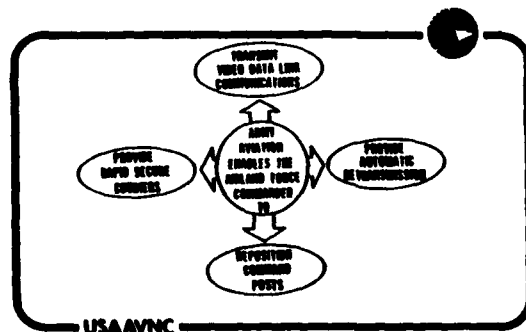
e. Intelligence and Electronic Warfare. Aerial platforms carry sensor packages to provide detailed terrain weather information data for the intelligence preparation of the battlefield prior to the outbreak of hostilities.

Once the conflict is initiated, these sensors are a prime source of the intelligence information needed to allow the commander to accurately see and evaluate

the battlefield. Dedicated aerial target acquisition systems provide detailed target information on enemy units and activities. In addition attack, scout, and command and control elements provide significant input to the target development process.

Army aviation provides electronic deception systems and the mobility to rapidly emplace attended and unattended ground devices. Specially configured and equipped aerial elements simulate the full range of aerial operations causing the enemy to react to false information. Aerial systems which provided the commander information and target development, support the counterintelligence effort with identification of enemy IEW systems. Aerial assets used to support the electronic warfare effort accompany aerial operations to mask friendly units from detection. Airborne jammers seek to disrupt enemy communications. Airborne antijamming platforms limit the enemy's capability to influence friendly communications. Aerial emplacement of attended and unattended ground EW systems enable the commander to maximize the EW effort at the initial time and place.

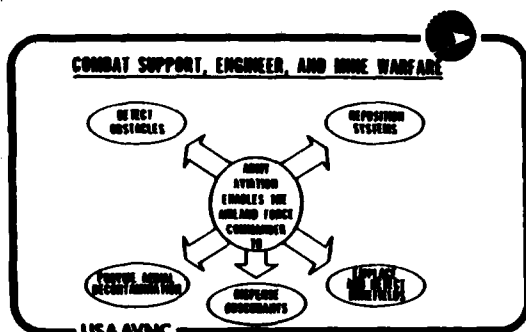
f. Communications. Aerial systems provide for the transmission and reception of radio, video display, and data communications. These communication systems are EMP hardened, jam resistant, and secure. They also provide an automatic retransmission



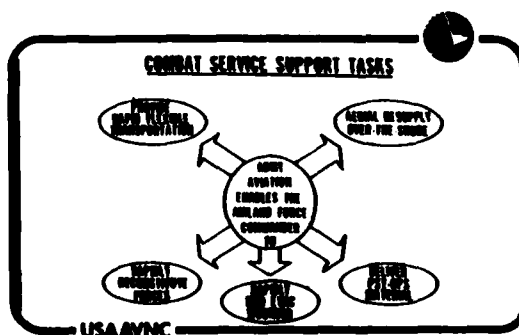
capability. Aviation provides for the rapid transportation and emplacement of modularized communications support packages. Self-contained, automated remote units are airlifted to provide communications to distant areas. Aerial elements provide rapid and secure courier service for high value, hard copy information.

g. Combat support, engineering, and mine warfare. Aerial systems provide for the detection of obstacles without disrupting the operational plan. When the reduction of obstacles is necessary, air assets rapidly reposition the required mobility, counter-mobility, and survivability (M-CM-S) forces to the point of interest. Aerial systems emplace scatterable mines, close and

far to prevent enemy use of avenues of approach without restricting friendly mobility. Aerial elements also provide suppressive fires to cover obstacles. Aerial systems dispense wide area obscurants to protect major logistics complexes from enemy detection. Air elements are used to rapidly move individual and collective shelters to areas of nuclear, biological, and chemical action. Airborne decontamination units spray foam to decontaminate and mark large areas.



h. Combat service support. In support of the battle, the use of aerial platforms, along with ground effects and high mobility vehicles, is maximized. Utility, medium, and heavy lift aerial vehicles move all types of support rapidly across the battlefield. Maximum use is made of aerial means of delivery of resources during logistics-over-the shore (LOTS) operations at unprepared locations. Aviation's mobility permits the delivery of men and material deep into the area of operations directly from sealift and airlift assets. Aviation supports psychological operations by providing delivery means for propaganda (literature, visual, and voice) and



nonlethal substances and agents. Army aviation provides aerial platforms for rapid battlefield aeromedical evacuation. Aviation supports the reconstitution of the AirLand Force by rapidly transporting personnel and supplies to the affected unit. Additionally, airlift assets provide a highly flexible and responsive means of delivery of repair parts, components, major assemblies, and maintenance personnel to repair critical vehicles and equipment on site. Aerial platforms are used to speed recovery/evacuation of equipment.